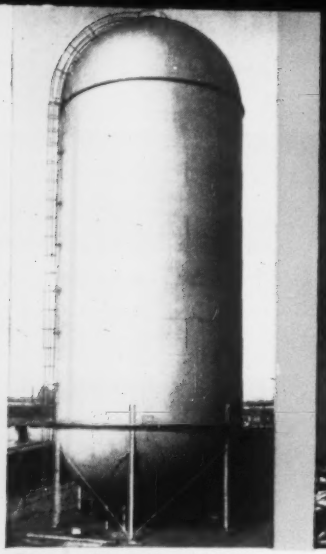
ENGINEERING NEWS-RECORD

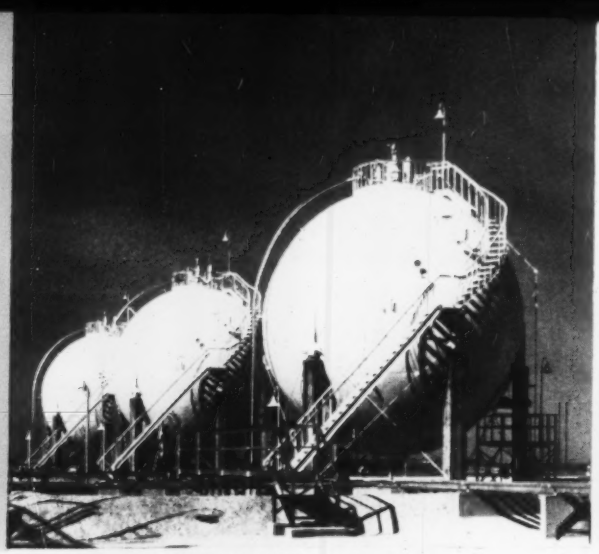
Building backwards beats Oa

STEVENS RICE GS N
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

A McGRAW-HILL PUBLICATION



Pressure Gas Holder, 40' x 69'



30' Pressure Spheres, Gasoline

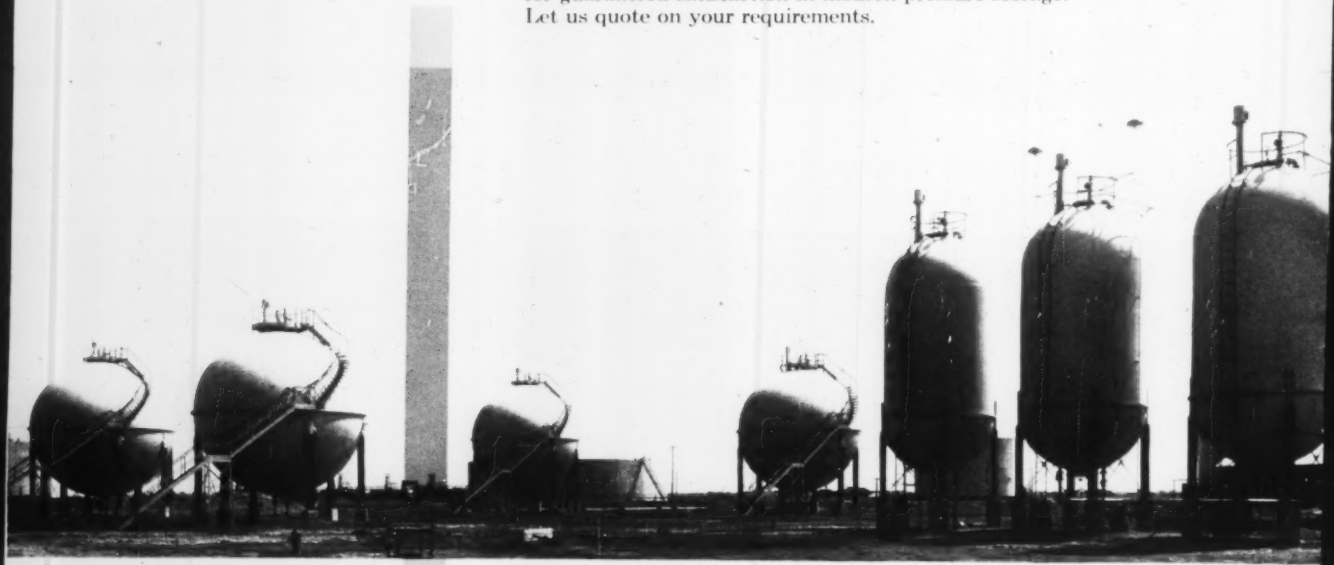
30' Pressure Spheres, Butadiene

EFFICIENT PRESSURE STORAGE OF VOLATILE PETROLEUM PRODUCTS

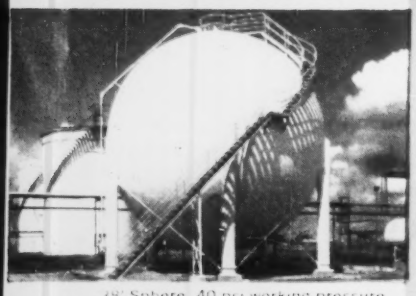
PDM
STEEL PLATE WORK

SPHERES and BULLETS

For gasoline, gases and many petrochemicals, compact Pressure Spheres and Bullets by Pittsburgh-Des Moines offer valuable savings of storage space and prevention of evaporation losses. Efficient design, dependable fabrication and expert erection, complete with all piping, valves and fittings, make PDM your logical choice for guaranteed satisfaction in modern pressure storage. Let us quote on your requirements.



Pressure Spheres and Vertical Bullets



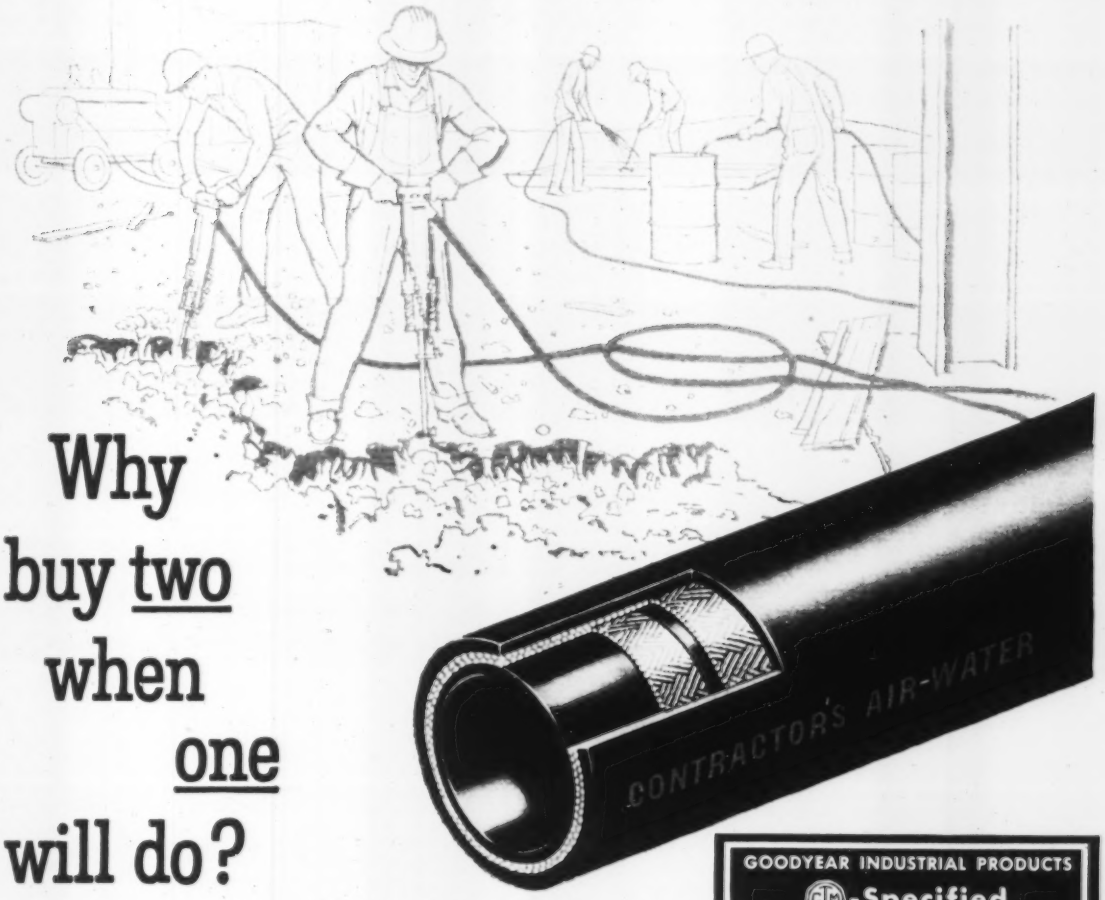
38' Sphere, 40 psi working pressure

Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, BALTIMORE, DES MOINES, SANTA CLARA, FRESNO, and STOCKTON, CALIF.

Sales Offices at:

PITTSBURGH (25)	3414 Neville Island	DES MOINES (8)	915 Tuttle Street
BALTIMORE (26)	Curtis Bay Station	DALLAS (1)	1219 Praetorian Bldg.
NEW YORK (17)	Suite 2716, 200 E. 42d St.	SEATTLE (1)	Suite 322, 500 Wall St.
CHICAGO (3)	618 First National Bank Bldg.	SANTA CLARA, CAL.	621 Alviso Road
ATLANTA (5)	361 E. Paces Ferry Rd., N.E.	DENVER (2)	323 Railway Exchange Bldg.
EL MONTE, CAL.	P. O. Box 2012		



Why buy <u>two</u> when <u>one</u> will do?

Here's one hose that can handle practically every air or water assignment on any kind of construction job.

It was designed by the G.T.M. – Goodyear Technical Man – and his colleagues for air pressures up to 200 psi. Or it's an ideal water hose for filling, supplying or wash-down service.

Buy it in continuous lengths up to 400 feet (in the 1-inch or smaller sizes) and you can cut off the lengths you need – as you need them. Every piece will give you a rayon-cord-reinforced ruggedness that means extra-long, trouble-free service on even the toughest jobs.

So why buy both air *and* water hose when this one handles both so capably – and economically. Just contact your Goodyear Distributor – or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

GOODYEAR INDUSTRIAL PRODUCTS

GTM-Specified

Contractor's Air-Water Hose for Construction Work

A Rugged cover that's both abrasion- and sun-resisting — continuously print-branded for easy identification

B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking

C Special nonporous tube resists alkali or slightly acid water

the big name in hose is

GOODYEAR

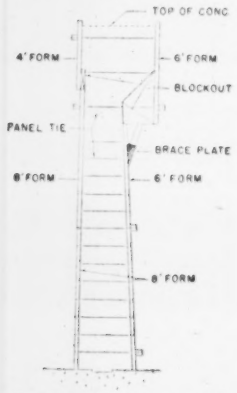
THE GREATEST NAME IN RUBBER

Battered Walls

Symons Forms on St. Louis Expressway

. . . Form Double Battered Walls 12" at Top, 3' at Base

On the downtown phase of the St. Louis Mark Twain Expressway, contractor R. B. Potashnick & J. S. Alberici Construction Company used 8,000 sq. ft. of Wood-Ply and 20,000 sq. ft. of Symons Steel-Ply Forms.



Job called for retaining walls, many of them double battered so that forms were angled to give 12" top thickness and up to 3' thickness at base. Heights varied from 4' to 34'. In addition, the forms were used to pour footings, abutments, piers and beams. Contractor obtained 30 re-uses.

Symons Forms may be rented with purchase option. Additional information on how to use Symons Forms for *battered walls* sent on request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Ave., Dept. G-9, Chicago 39, Ill.

MORE ***SAVINGS*** *FROM* ***SYMONS***

ENGINEERING NEWS-RECORD

EIGHTY-FIFTH YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-8630

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.
Managing Editor, Edward H. DeHart
Senior Editor, Frederick S. Merritt

Highways, Airports—Transportation
Edward M. Young, Jr., Marc Leggiero, Joseph F. Wilkinson

Buildings, Bridges—Structures
Frederick S. Merritt, Marianne Stern, David B. Hill

Rivers, Sanitation—Water Resources
James B. Sullivan, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Joel Roth

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Martha Alexander, *Staff Assistant*
Laureas L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Barbara Lamb, Irwin Landau, William W. Jacobus, Jr., Evelyn Stepic, John C. Greenough

Presentation
Harry W. Jensen, Robert G. Young

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra, Diane Tartaglia, Marie Moravsik, Elaine Chomyak, Elizabeth Werra, Eleanor Queret
James Webber, Ruth Carlson, *Economics*
Evelyn Huber, Charlotte Foster, *Statistics*
Bertha Herrmann, *Unit Prices*
Patrick Sheehan, *Prices, Wages, Indexes*

Editorial Research and Indexing
Helen Rich, Eva Gierat, Rene Hay, Nancy Moore, Leah Shanks Edith Feinberg

Consulting Editors: **Van Tuyl Boughton, Nathan A. Bowers**

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Anthony DeLeonardis, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Dean Reed, Morton A. Reichek, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., B. E. Barnes, Chief, Frances Ridgway; **Chicago**—520 North Michigan Ave., Stewart W. Ramsey, Chief, Elizabeth Wilson; **Cleveland**—55 Public Square, William G. Meldrum, Chief, Violet Forsha; **Dallas**—901 Vaughn Bldg., Kemp Anderson, Jr., Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Barbara Bigge; **Los Angeles**—1125 West 6th St., John Kearney, Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., Margaret Ralston, Chief, Jenness Keene, Donald Winston; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: New York—John Wilhelm, Director; **London**—William J. Coughlin; **Paris**—Robert E. Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson; **Moscow**—Robert Gibson. Correspondents in 50 cities throughout the world.

Correspondents: In 75 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Publisher, Robert F. Boger

ENGINEERING NEWS-RECORD, Vol. 163, No. 4, JULY 23, 1959

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, President, Publications Division; Shelton Fisher, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U. S. A.

Title registered in U.S. Patent Office. ©Copyright 1959 McGraw-Hill Publishing Co., Inc. All Rights Reserved.

UNCONDITIONAL GUARANTEE: We agree, upon request to our New York office, direct from paid-up subscribers, to cancel any subscription if ENGINEERING NEWS-RECORD's editorial service is unsatisfactory, and will refund the proportionate subscription price of any unmailed copies.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

MAKING THOSE CRANE JOBS GO!

Here's a combination that makes those overpass and bridge jobs smooth and fast. Two Northwests working together give you the accuracy and flexibility that takes out all the waste motion characteristic of less adaptable equipment.

Here, on a Michigan expressway a Model 41 handles and holds the cross members on their bearings while the big 95 smoothly sets the longitudinal members.

On a job like this you have the smooth booming that comes with the Northwest Independent High-Speed Boom Hoist, independent in operation of all other machine functions and power controlled *both up and down*. You have the Northwest 3rd Drum that gives you an extra load line. You have the "Feather-Touch" Clutch Control that gives you the true feel of the load—a simple mechanical device free from the complications that come with pumps, compressors, valves and other delicate mechanisms. You have Uniform Pressure Swing Clutches with the velvet action that takes the jerks and grabs out of swinging, bringing greater accuracy to spotting loads, a particular advantage with high booms.

Greater mobility, visibility and many other advantages contribute to this better team performance.

Don't conclude that you know *all about* a Northwest. There is much in advanced design that we cannot tell you of in our advertising. Take your crane problem up with a Northwest Man. He can bring you up to date and often be a real help.

NORTHWEST ENGINEERING COMPANY
1504 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

Ask about the 25-D 18-ton Lifting Crane

Here's a still finer workhorse in the ¾-yd. class—the 25-D with a combination of advantages found in no other machine of this capacity.

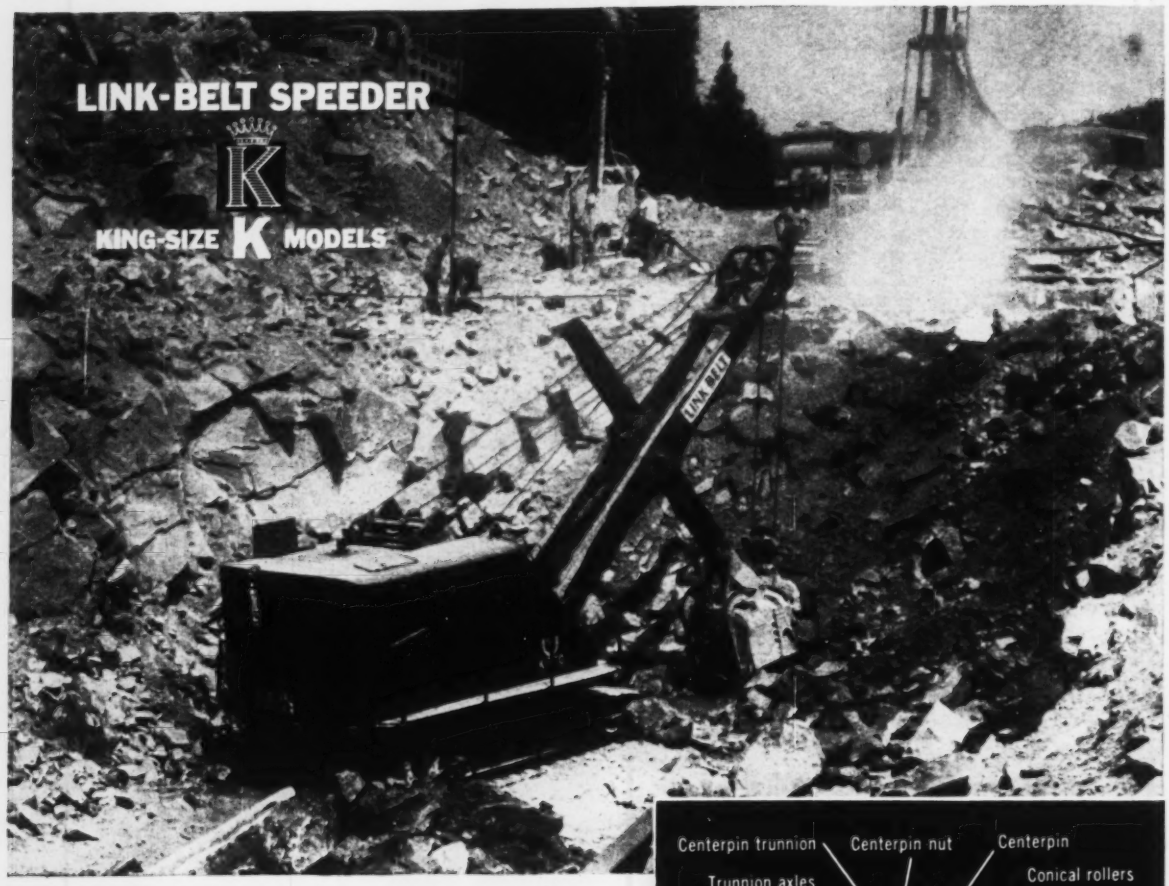
Available also as standard shovel, crane, dragline and pullshovel. Don't buy a ¾-yd. rig without getting the full story of this most modern of ¾-yd. machines.

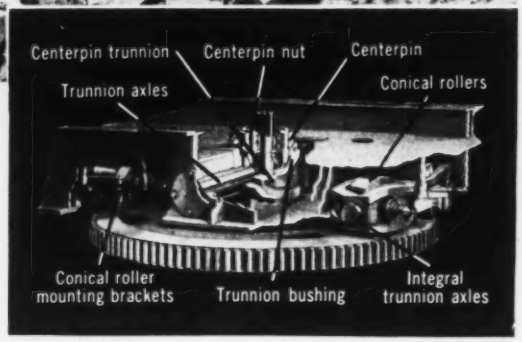
NORTHWEST *Always Ready to* GO

-95-1-LCG-k

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
⅜ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	⅜ Yd. to 3 Yd. Capacity	⅜ Yd. to 2½ Yd. Capacity	25-Ton and 33-Ton Capacity





Exclusive centerpin trunnion and oscillating roller design eliminates concentrated centerpin loadings. Self-aligning centerpin trunnion distributes load evenly. Oscillating Conical rollers assure full-face contact with the roller path.

Put the shock in the rock...

come back for more!

TOUGH CUTS OR BRUTE LIFTS, BURLY 1½ TO 3-YD. K-MODELS OUT-MANEUVER SMALLER RIGS... OUT-PRODUCE LARGER MACHINES!

Always on top of the heavyweight jobs! Your operator in the cab of a Link-Belt Speeder King-size K-model *knows* he need *never* baby this machine!

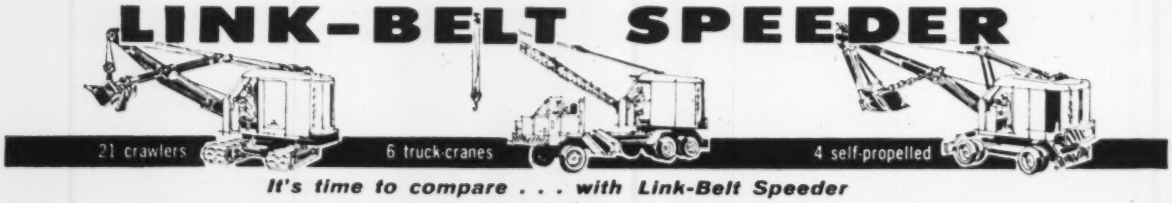
He feels the smooth surge of greater *usable* hp through hefty, extra-size shafts, gears and clutches. He socks the dipper in — rugged K-model structural members soak up the shock.

And K-models deliver these output-boosting advantages: Speed-o-Matic, the *true* power hydraulic controls . . . fast, effortless power hydraulic steer . . . *plus* bonus usable hp.

If you'd like more facts demonstrating how King-size K-models (1½ to 3-yd. capacity) outstrip the field, see your distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

15,232-A

LINK-BELT SPEEDER



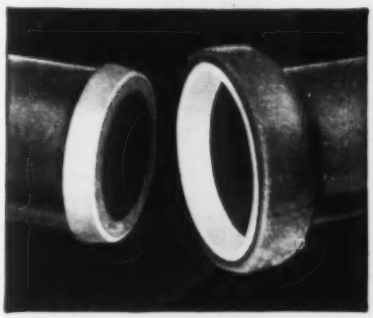
It's time to compare . . . with Link-Belt Speeder

longer, stronger AMVIT Jointed Clay Pipe prevents infiltration SIX WAYS

Bottletight, Factory-Made Joint of Plasticized Resins of Polyvinyl-chloride gives lower cost-in-place

Engineering standard and specifications for sanitary sewers are written so that both the contractor and the community can obtain the best type of construction.

They limit the amount of infiltration in sewer pipe joints, which, in turn, reduces pumping and treatment plant costs. Amvit* Jointed Clay Pipe was especially designed to achieve best possible results.



1. FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl-chloride. No other combination of materials is used or needed. It is applied on the pipe by a special manufacturing process and delivered to the job site ready for immediate installation.

2. DESIGN PREVENTS LEAKS

The Amvit Joint is a compression type joint based on the ball and socket principle. The material on the spigot end is a convex shape, with the bell end in a concave shape. Simply pushing the pipe together "makes" the joint, keeping the surfaces of the bell and spigot rings in constant compression. Thus, infiltration, exfiltration, and root penetration are prevented.

3. QUICK, FOUL-PROOF INSTALLATION

The joint is on the pipe delivered to the job site ready for immediate installations. No other materials such as caulking, joint compound, hot pots, or ladles are needed to make the Amvit Joint.

4. PERMITS DEFLECTION, ABSORBS SHOCKS

Amvit is made from a plastic which has many characteristics similar to rubber. It is pliable, permitting deflection without leakage. It is resilient, can absorb shocks, and vibration.

5. BETTER FLOW, LESS MAINTENANCE

The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action. Because the joint is really tight, no foreign matter such as dirt, sand, or stones can possibly enter the line.

6. COMPLETE FITTINGS

Amvit is furnished on all standard fittings, as well as pipe. This will permit a uniformly tight line from house to treatment plant.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information on how Amvit can help cut your sewer installation costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you, for this descriptive folder.

*T. M. Registered

SINCE 1848

AMERICAN

American Vitrified Products Company

CLEVELAND OHIO

PLANTS ACROSS THE NATION . . . Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • Whitehall, Illinois

Does Civil Engineering Lack 'Glamor'?

SIR—In regard to a letter by Prof. Sumner B. Irish on the present status of civil engineering and persons engaged in this profession (ENR June 25, p. 7), I must express views quite to the contrary.

I would prefer to think that Professor Irish was commenting on specific cases only and not on the profession as a whole. Civil engineering is a broad, diversified field, offering anyone all the glamor, prestige, and rewards that are forthcoming from any other profession.

To the civil engineer falls the task of public health, transportation and many other vital activities.

I further object to hearing civil engineers referred to as "hackers." I personally feel that many who have chosen this profession are sincere in their efforts to perform whatever task they are confronted with in a manner that does not warrant the term "hacker" under any circumstances. Regardless of how they attained their knowledge, or the wage scale, or any other factor that may be considered, they do at present and will in the future render a public service equal to any other profession.

C. E. SABIN
Tampa, Fla.

▶ Your editorial "Civil Engineering's Place" (ENR May, p. 116) and particularly your endorsement of Professor Sumner B. Irish's extended discussion may well arouse serious concern for the future of civil engineering, but not—it is fervently hoped—for the reasons stated therein. It is sad, indeed, to contemplate that a civil engineering educator should subscribe to the idea that other areas of engineering are more "glamorous"; that ours is "an immature culture that fails to recognize the merit of less glamorous things"; and that "somebody has to take care of the more routine and mundane problems in which the civil engineer is normally engaged."

Nothing could be further from the truth, and if this opinion is widely held within the profession, it had better be corrected quickly lest civil engineering assume the role to which many have relegated it: the status of technicians!

To begin with, the time has long since passed when we must face up to the fact that ours is an age of science. Keen minds interested in engineering have a strong motivation to familiarize themselves with this science, and to apply it with ingenuity to the solution of contemporary problems. No amount of "selling"—including high salaries in the construction industry—will induce these minds to lavish their labor of love on "taking care of routine and mundane problems."

On what grounds has civil engineering been relegated to the "routine" and the "mundane"? Are the equations of fluid flow through a zoned embankment subject to varying intensity of rainfall, or of a warped concrete pavement or inverted thin shell on an inelastic foundation any less involved than those that govern the chemical reactions associated with petrochemical synthesis? What other areas of engineering have made more extended use of high speed computers? Are the structural and material problems in the design of nuclear reactors less complex than the analysis of the piping system, and who but civil engineers are the most logical choice to cope with the problem of the disposal of radioactive wastes? Who should be concerned with the design of launching pads for "flying off into space" with which considerable difficulty is already being experienced . . . to say nothing of the effects of the resulting vibrations on adjacent structures and the instruments they house?

I submit most emphatically that contemporary civil engineering problems are just as glamorous, just as challenging, just as demanding of mathematical and scientific background as any other areas of engineering.

If indeed a "selling" job has to be done, then it should be directed towards convincing the profession that while experience, judgment and—in some instances—intuition will always remain prime requisites to success in civil engineering, its future lies in expanding the application of science and sophisticated methods of analysis to the solution of both new and old problems. When a premium is placed on eager young minds steeped in a scientifically oriented civil engineering education, there will be no need for the kind of "selling" job contemplated in your editorial and in Professor Irish's letter which, in any case, would be doomed to failure.

G. A. LEONARDS
Assistant Professor of Soil Mechanics
Purdue University
Lafayette, Ind.

▶ Re civil engineering's place: All the statements presented in your editorial are correct from the viewpoint of increasing the dignity and prestige of the profession. I believe that very little effort has been made in this direction by members of the profession, ASCE and other associations.

In addition, you are probably aware of the professional "environment" of companies and organizations which employ civil engineers:

However, these are fringe areas where the primary consideration of financial achievement is involved. Civil engineering pays less than other branches of engineering. I don't believe any elaboration on this is required.

I think some change is required which must come from within, and I believe the professional organizations and the members of such organizations have failed in this respect.

GEORGE G. ROBERTS
Eau Gallie, Fla.

Desalting Cost Misrepresented

SIR—Your article, "Desalting Costs May Be Halved by '69" (ENR June 4, p. 23) quotes the new chief of saline water development in the U. S., A. L. Miller, M.D., as follows: "Within five years the cheapest new supplies of fresh water southern California will be able to get will come from the sea."

The article goes on to say that the government will build a plant on the Gulf Coast, probably in Texas, which will produce water for about $1.00 per thousand gallons ($326 per acre-foot). The statement continues, "As the size of the plants increases to 15 or 20 million gallons per day, Dr. Miller forecasts the cost may be expected to drop to about 60 cents per 1,000." ($196 per acre-foot.)

The best that private industry has been able to do is the large plant of the Shell Company at Aruba. It is said to produce water for $1.75 per thousand gallons, or $570 per acre-foot, and, I understand, that with free heat.

Water deliveries under the California Aqueduct system where the pump lifts are greatest are estimated at a maximum of $50 per acre-foot, less than one-tenth of the present cost at Aruba.

Our California Legislature has just passed a bill providing for a state election on a $1,750,000,000 bond issue [for water development] (ENR June 25, p. 32). The new legislation, of course, will receive very careful study between now and election day in 1960. We can reasonably expect that one of the effective though false means of undermining support will be by forecasting low-cost fresh water from the sea.

(Reader Comment continued p. 10)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

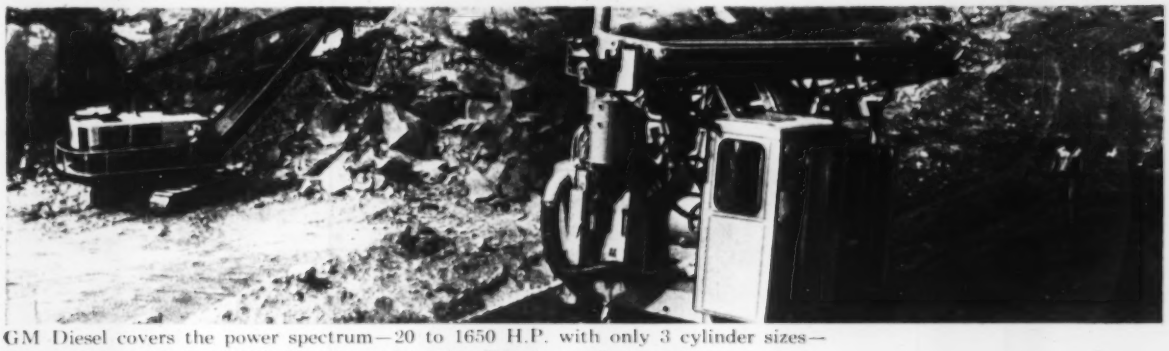
NOW YOU CAN STANDARDIZE WITH THE

all purpose power line

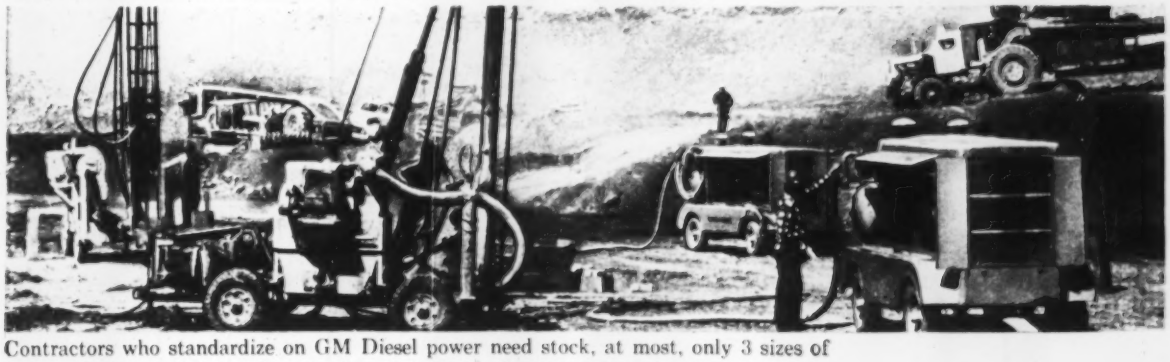
(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

...and get all the benefits of GM Diesel standardization in any type of equipment built by over 250 leading manufacturers

Standardization with GM Diesel engines pays off big for contractors because fast-stepping, 2-cycle "Jimmy" Diesels power the finest equipment—get work done faster



GM Diesel covers the power spectrum—20 to 1650 H.P. with only 3 cylinder sizes—compared to the 5 to 10 cylinder sizes which other Diesel manufacturers use



Contractors who standardize on GM Diesel power need stock, at most, only 3 sizes of wearing parts—maintain full protection with the smallest investment in spares

GM DIESEL

PARTS AND SERVICE WORLDWIDE

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

MAP showing locations of North Dakota's new Interstate Route 29 and State Route 54. Major bridges over the Pembina River at Pembina and over the Red River at Oslo, Minnesota, will be steel structures fabricated by the American Bridge Division of United States Steel. Others will be concrete on USS Steel H-Piles.

CONTRACTORS:

SITE 1: Swingen Construction Co., Grand Forks, N. D.

SITE 2: Otto J. Eickhof & Sons, Inc., Crookston, Minn.

SITE 3: Wm. Collins & Sons, Inc., Fargo, N. D.

SITE 4 & 5: Schultz & Lindsay Construction Co., Fargo, N. D.

180 feet down. Welding plate on USS H-Pile which will be spliced to a pile already down. At this site, they drive piling 180 feet to reach firm footing.

USS Steel H-Piles pay off for North Dakota they now have stable foundations

North Dakota State Highway Department Bridge Engineers have been struggling with a baffling foundation problem for years. Recently, together with Minnesota Highway Department Bridge Engineers, steps were taken to find a solution. The valley area of the Red River which forms the northern portion of the boundary between these two states was once a lake but is now filled with a tremendous quantity of unstable clay to a depth of 180 feet or more.

Previously, bridges constructed in this area had been placed on displacement-type piles or on floating foundations. While neither of these methods was very satisfactory from the performance standpoint, there seemed to be no economical alternative. It was accepted as fact that periodic repairs would be necessary to correct for the deficiencies of these foundation supports. High maintenance costs appeared inevitable.

When the new Interstate Highway and other state projects were planned through the area, it was obvious that stable foundations would be needed for fourteen bridges involved. So in 1957, the North Dakota Highway Department in collaboration with the Minnesota Highway Department and the Bureau of Public Roads had test borings made in various locations. They found, at a level assumed to be the original lake bed, a mixture of gravel, clay and sand, which seemed dense enough to support piles in point bearing. Five test piles were driven and loaded. Test loads of 250 tons were successfully applied to 14", 73- and 89-pounds-per-foot USS Steel H-Piles. (Displacement piles had once been driven 80 feet into the overlying soil to attain a bearing value of only 12 tons per pile.) Working loads of as high as 90 tons per

Splicing two H-piles with diamond shaped plate. Ample strength is obtained.

Driving H-piles for the new Red River Bridge near Oslo, Minn. Previously, bridge foundations in this area were set on slabs or displacement piles.

and Minnesota . . . for 14 new bridges

89-pound pile were thus substantiated by these tests and subsequently incorporated into the final design. A total of 2,100 tons of USS Steel H-Piles were driven for these bridges.

The bridge engineers are well pleased with the results of this program. They saved additional money on the minor bridges by designing the intermediate piers to utilize piles encased in concrete as bents to support the bridge structure. They like the way the piles drive without damage, the easy splicing, and the assurance that their foundations will finally stay put.

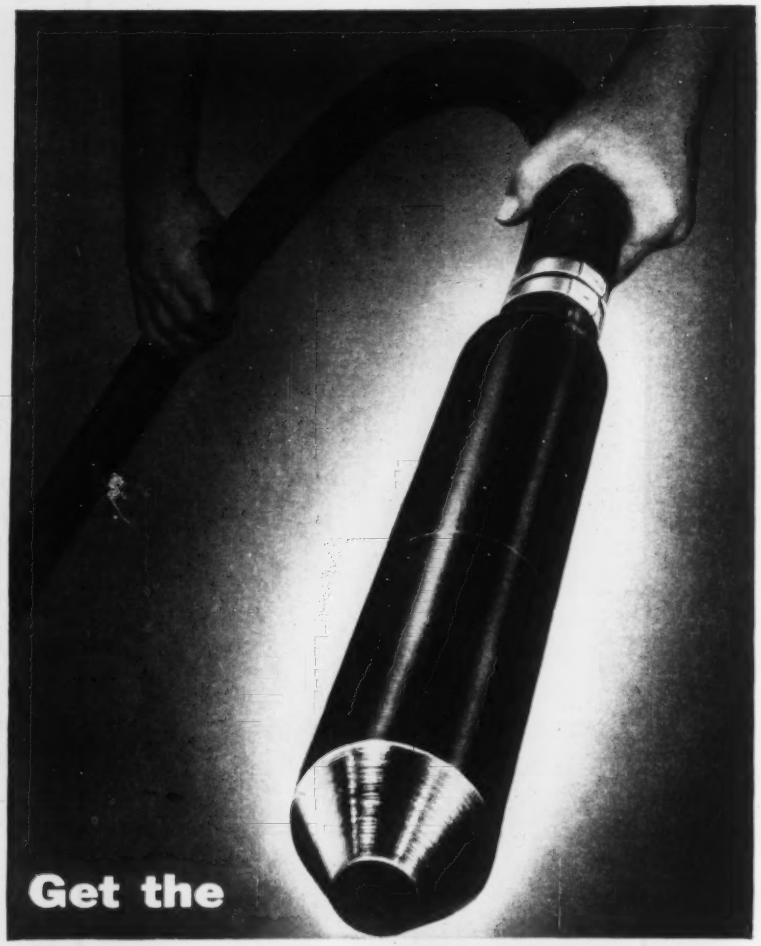
Quick Deliveries. United States Steel is in excellent position to give you favorable deliveries on steel H-piles or steel sheet piling of any type. Write to any of our district offices or United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

USS

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Export Company

United States Steel



SOLID POWER

of a Remington concrete vibrator

You're looking at the business end of Remington's new Model EV-25 motor-in-head vibrator. Users say it's the best electric motor-in-head vibrator made, and Remington guarantees it for 6 months. The Model EV-25 is just one of 11 concrete vibrator models available from Remington. Ratings range from 1 to 6¾ hp in air, electric or gasoline-powered models. Interchangeable shafts, housings and heads enable equipment to be adapted to widely varying conditions. Mail coupon or write for performance data and specifications on the new Model EV-25 and the complete line of Remington concrete vibrators.

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER TOOLS ARE AVAILABLE IN **AIR • ELECTRIC • GASOLINE AND POWDER-ACTUATED MODELS**

Remington

Remington Arms Company, Inc., Bridgeport 2, Conn.
IN CANADA: Remington Arms of Canada Limited, 36 Queen Elizabeth Blvd., Toronto 18, Ont.

DUPONT

FREE POWER TOOL CATALOGS ENN-8

Remington Arms Company, Inc., Bridgeport 2, Conn.

Please send—without obligation—catalogs on Remington Contractor & Industrial Tools checked below:

☐ Concrete Vibrators ☐ Air Tools ☐ Electric Tools ☐ Flexible Shaft Machines ☐ Chain Saws ☐ Stud Drivers

*Name*_____ *Position*_____

*Company*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

Such statements are misleading and, in some cases, highly injurious to proper water development.

SAMUEL B. MORRIS
Consulting Engineer
Los Angeles, Calif.

Computers and Design

SIR—Our firm has written a program similar to the one described in "Column Design Speeded With Computer" (ENR May 14, p. 64). But our program will accept AASHO or ACI specifications for tied or spiral columns.

Our program does not type out as much data as the King and Gavaris program, but only the controlling points to determine the shape of the curve. For the uncracked section, only two points are required to define this straight line portion; however, several solutions are needed for the cracked-section analysis, including the condition of moment and no load. The program has been presented as a Users Project in the Bendix Computer Users Group.

Like all graphical solutions to behavior problems, the curves must be used with some care. For example, there is a pronounced discontinuity at a value of $e/t = 0.5$; in this region the method of analysis changes from ultimate to elastic. A conservative method may be to extend either curve and use good engineering judgment.

In the use of any computer program or system of graphical solution, the designer should be completely familiar with its assumptions and limitations.

I am pleased that other progressive consulting firms have begun to use the computer to supplement and extend the fine art of graphical mechanics.

ROBERT K. WOODRICH
Clark, Daily & Dietz
Consulting Engineers
Urbana, Ill.

Public Housing Bids

SIR—"Concrete Frames Still Win" (ENR April 9, p. 24), describing the bidding on New York City's Woodrow Wilson Houses, confirms this office's findings of the past 10 years that for multistory apartment buildings, flat plate concrete construction does cost less than steel framing.

Were the designs identical with regard to clear ceiling height? The report compares an 8 ft 6 in. story height for concrete to 9 ft 0 in. ceiling height for steel. If true, an architectural confrere estimates that this additional space in the steel building would account for an extra $275,000.

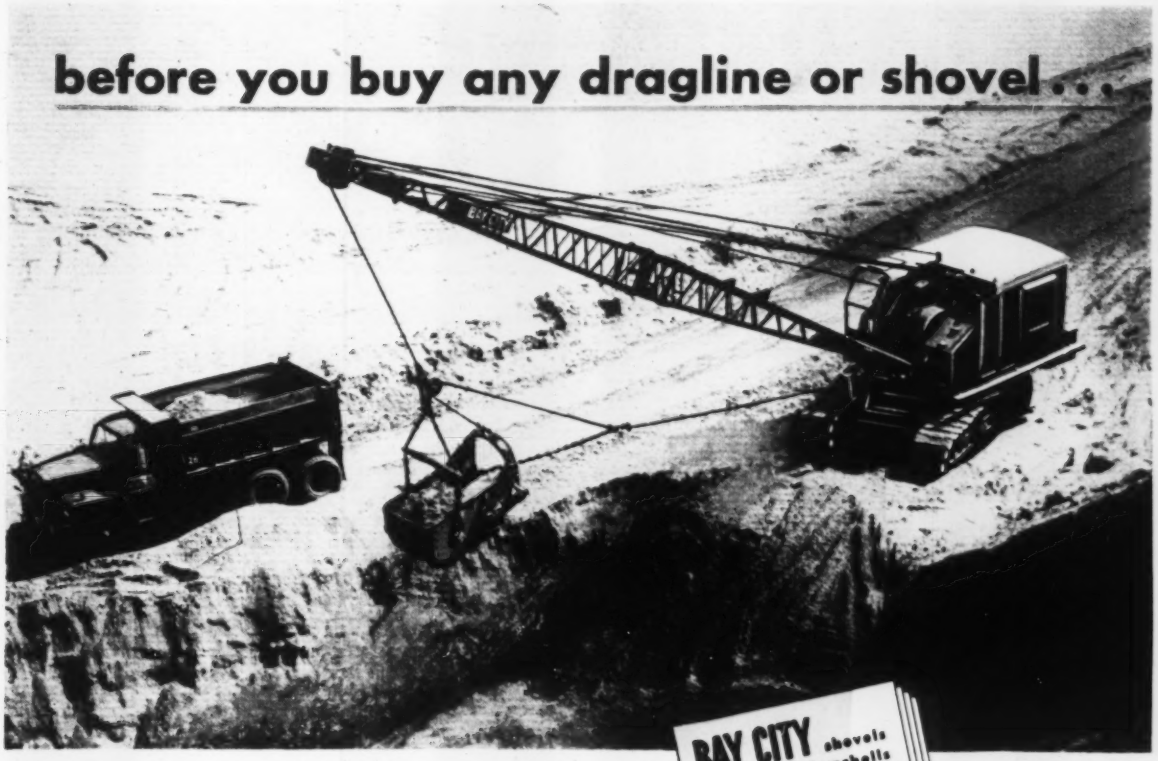
What about comparative fire ratings? How is the insurance affected?

DAVID BLOOM
Philadelphia, Pa.

Editor's Note: Actually, ceiling heights were the same for both cases. Fire ratings and insurance are also identical.

(Reader Comment continued p. 13)

before you buy any dragline or shovel . . .



Here is a Model 72 equipped with a 2-yard bucket keeping nine trucks hustling on a 20-mile highway relocation job. The "Performance Proved" BAY CITY loaded over 3000 yards per day.

. . . check the BAY CITY for low cost • big output • profit returns

Now you can see for yourself how the quality built, trouble-free, heavy-duty features of this convertible excavator can mean bigger profit for you—the BAY CITY story is in this big 16 page catalog. Write for it today and be ready for those big jobs ahead.

NEW 3¾% finance plan for you . . .

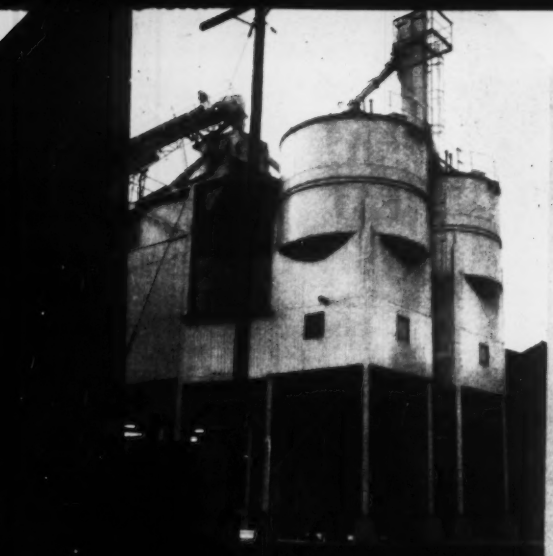
Now BAY CITY offers a new low-cost 3¾% financing plan that makes it easy to put the "Performance Proved" BAY CITY equipment to work for you. Monthly payments up to 3 years on crawler machines . . . 5 years on rubber tire mounted machines. See your BAY CITY dealer, or write for details . . . today.

BAY CITY

THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY 1, MICHIGAN

282



Twin 1000-barrel Heltzel Cement Plants are partitioned into four compartments to handle up to four types of cement and fly ash. All compartments are loaded by a common elevator.

HELTZEL

twin two-stop manual plant gives ready-mix producer speed, flexibility

By teaming two standard Heltzel batching plants Marion Ready Mix, a leading Pittsburgh concrete supplier, is able to get the high speed production they require during rush periods. Utilizing dual two-stop drive-throughs, four trucks can be handled simultaneously, and different mixes can be batched at the same time by a single batch crew.

Aside from the production advantages Marion is able to handle both plants with a single material handling system. One belt conveyor services all eight compartments of the two 400-ton aggregate plants through an eight-position rotary spout. The four compartments of the two 1000-barrel cement plants are fed by a single elevator through an ingenious system of flop gates. All batchers are controlled from o. e platform.

The results: Marion charged 30 trucks with aggregate and cement in 35 minutes. A six-yard (19,000 lbs.) aggregate batch was cycled in 45-seconds and a six-yard cement batch in 55-seconds. This from standard manual controls.

If you're not now getting this kind of plant performance why not contact your Heltzel representative for the last word in modern batching technique.
Write today for complete information.

THE HELTZEL STEEL FORM AND IRON COMPANY

WARREN, OHIO

. . . **Reader Comment**

Tolls for Interstate

SIR—In the editorial, "Choosing the Lesser Evil," and in the lead article, "The Interstate Issue is Joined," (ENR May 14) the dilemma incident to the shortage of the Highway Trust Fund is discussed.

I believe there is a solution to this problem, though it might require some changes in the Highway Act.

The first part of the Pennsylvania Turnpike was partially financed with Federal funds; 45% of the cost was an outright grant by the Public Works Administration.

Why not on those portions of the Interstate System where it is economically practical use this same method of financing, or some variation of it?

Let the Federal Government put up part of the cost—say 50%. Make up the deficit through the sale of bonds—and pay off the bonds through the collection of tolls.

The tolls also will cover maintenance.

ALDEN E. CORNELL
Project Engineer
Michael Baker Jr., Inc.
Fort Pitt Tunnel
Pittsburgh, Pa.

▶ While the financing of the Highway Trust Fund is undoubtedly quite complicated and I am not familiar with all the issues involved, it is my understanding that anything other than a "pay-as-you-go" plan is contrary to the letter as well as the intent of the Federal Administration Highway Program.

Further, I believe there is a possibility that the program will have a harmful rather than a beneficial effect on several of our metropolitan areas and would like to call your attention to an article entitled "The Concrete Octopus" on pages 20, 21, and 22 of the May 18, 1959, issue of RAILWAY AGE MAGAZINE.

I. G. FORBES
Registered Structural Engineer
State of Illinois

Mess in Washington?

SIR—As an engineer and most partisan Democrat I resent the Republican bias of your journal. Commenting on the mess made in Washington in the construction of the new Senate Office Building you list the architect of the Capitol as an "Engineer" but fail to state that he is a REPUBLICAN ex-Congressman.

Messes in Washington are perpetrated by other than Democrats, you know.

HARLEY M. MUNTZ
Portland, Ore

Decimal Devil

A misplaced decimal point in ENR's Washington Observer, July 16, made the Senate's public works bill worth $12.6 billion. It should be $1.26 billion.

Make CONTROL JOINTS Faster and Easier with BLOK-JOINT

Blok-Joint is the cross shaped rubber extrusion used to make control joints in masonry walls. Used with ordinary metal sash blocks—no special blocks—no cutting or sawing—no bond breaking paper and mortar fill required. Simply slip Blok-Joint into the sash groove and calk the joint when the wall is completed.

Blok-Joint forms a secure interlock that adds to the lateral stability of the wall and provides for *both* contraction and expansion.

Blok-Joint can be used in single block walls, with brick and block backup, at wall intersections and at columns and pilasters.

Additional strength and resistance to cracking is assured by using Blok-Mesh "deep swedged" masonry wall reinforcing. You can see the extra gripability of its large, squared deformations where the mortar seats for maximum bond.

Why not investigate both Blok-Joint and Blok-Mesh today!

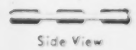
BLOK-JOINT

Pat. No. 2,869,356

For Control Joints

Made of "100 year life" rubber to meet ASTM and FEDERAL specifications. Comes in four lengths—8", 24", 48" and 50 foot rolls.

BLOK-MESH



Side View

"Deep Swedged" Reinforcing

Large, well defined, squared notches to give a deeper, stronger mortar grip than with conventional reinforcing with superficial nicks and burrs. No sharp edges to irritate hands. Butt welded to lay flat. Cuts and bends easily.

SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

Arch. File	Indus. File
4h	4c
Car	Car

Write for FREE Sample and Specifications

Blok-Joint and Blok-Mesh are products of the Carter-Waters Corp, 2440 Pennway, Kansas City 8, Missouri, Dept. EN

Available in the U.S. through Concrete Block Manufacturers and Building Materials Dealers. Distributed in Canada by Consolidated Concrete Industries, Ltd. 9th Ave. & 24th St. East Calgary, Alberta, Canada.

CONSTRUCTION MATERIALS
CARTER-WATERS
KANSAS CITY, MO. & MISSOURI

The Huber-Warco 5D-190 blades down a fill on Wisconsin's new Hudson-Eau Claire Road.

Gerke gives **5D-190** a tough assignment

Lawrence Gerke, a contractor in Merrill Wisconsin, chose the 5D-190 for the grading work on his Hudson-Eau Claire Road contract. The 5D-190 with a 195 h.p. diesel engine, torque converter and power shift transmission was just the ticket for this rugged terrain.

Over one million yards of dirt, and 300,000 yards of rock had to be moved. There were eight major cuts with the maximum 115 feet, and five major fills with the biggest being 70 ft.

The 5D-190's assignment . . . to build and maintain the haul roads, cut all the ditches, and work on the slopes after the cuts and fills were completed. The unit will also spread the granular sub-base and grade the top soil.

"We needed a grader that could do a man-sized job in keeping the haul roads clear and leveling off the fills," said Paul Potts, the grade foreman on the job. He continued, "That's a big order for one machine but the powerful 5D-190 is doing a good job. It's a very dependable grader and we're well pleased."

Let your Huber-Warco distributor show you what the features of the 5D-190 can mean to you on your jobs.

Huber-Warco on the job

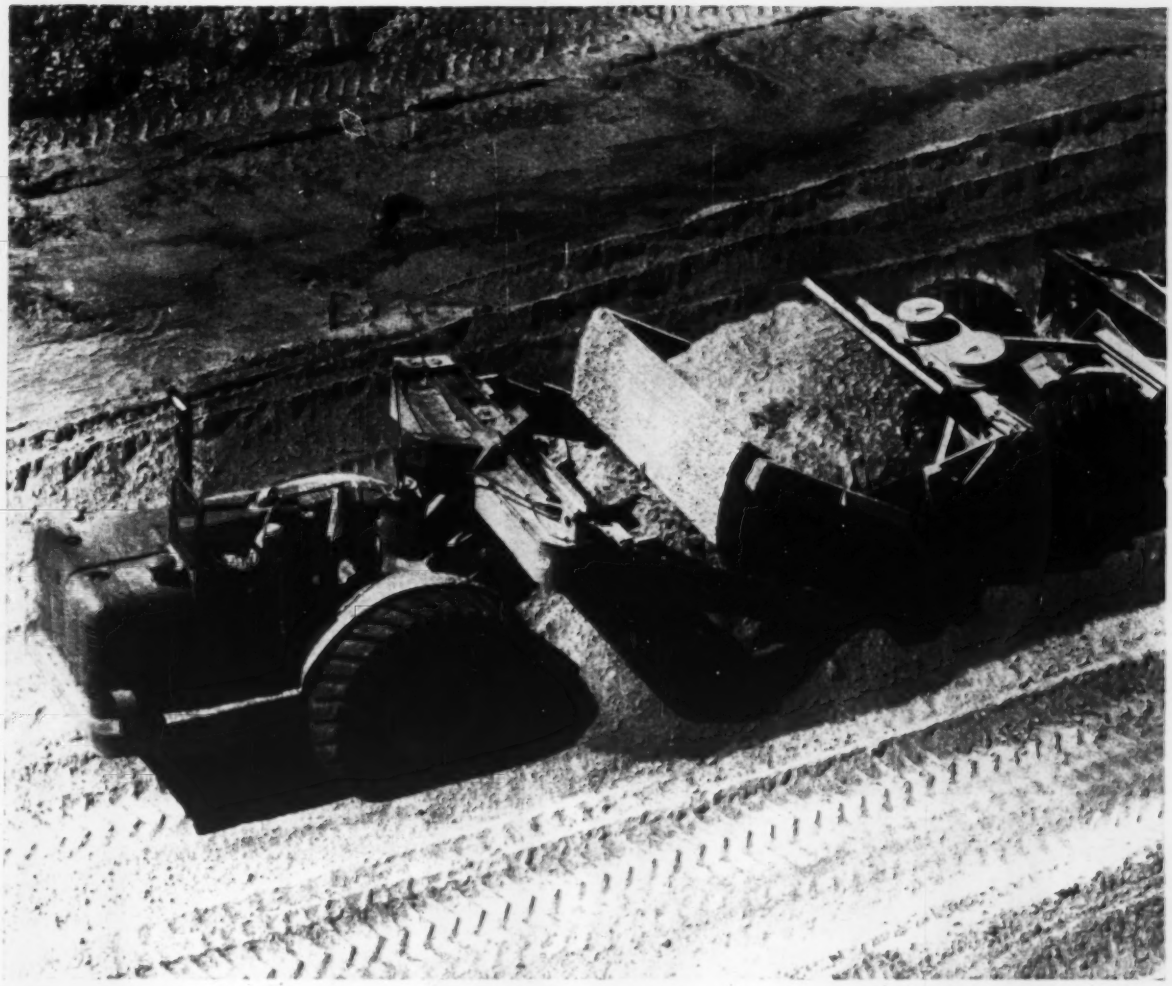
There's one grader on the job handling all of the grading jobs, and it's the powerful, dependable Huber-Warco 5D-190.

Haul units move on schedule as the 5D-190 smooths out ruts and removes sharp rocks from the haul roads.

HUBER W WARCO

Huber-Warco Company

MARION, OHIO



JOB RECORDS PROVE

Firestones move more payloads per tire!

Firestone off-the-highway tires lower earthmoving costs by cutting downtime and staying on the job longer! Every Firestone tire is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires. Tough Firestone treads and sidewalls defy cuts in rubble and shale. And Firestone S/F (Shock-Fortified) nylon cord bodies withstand bruising shock and impact to deliver maximum tire life! Count on Firestone off-the-highway tires for new low costs-per-hour! See your Firestone Dealer or Store and ask about the full line of tubeless or tubed off-the-highway tires and Firestone on-the-job service.

Rock Grip Excavator Wide Base

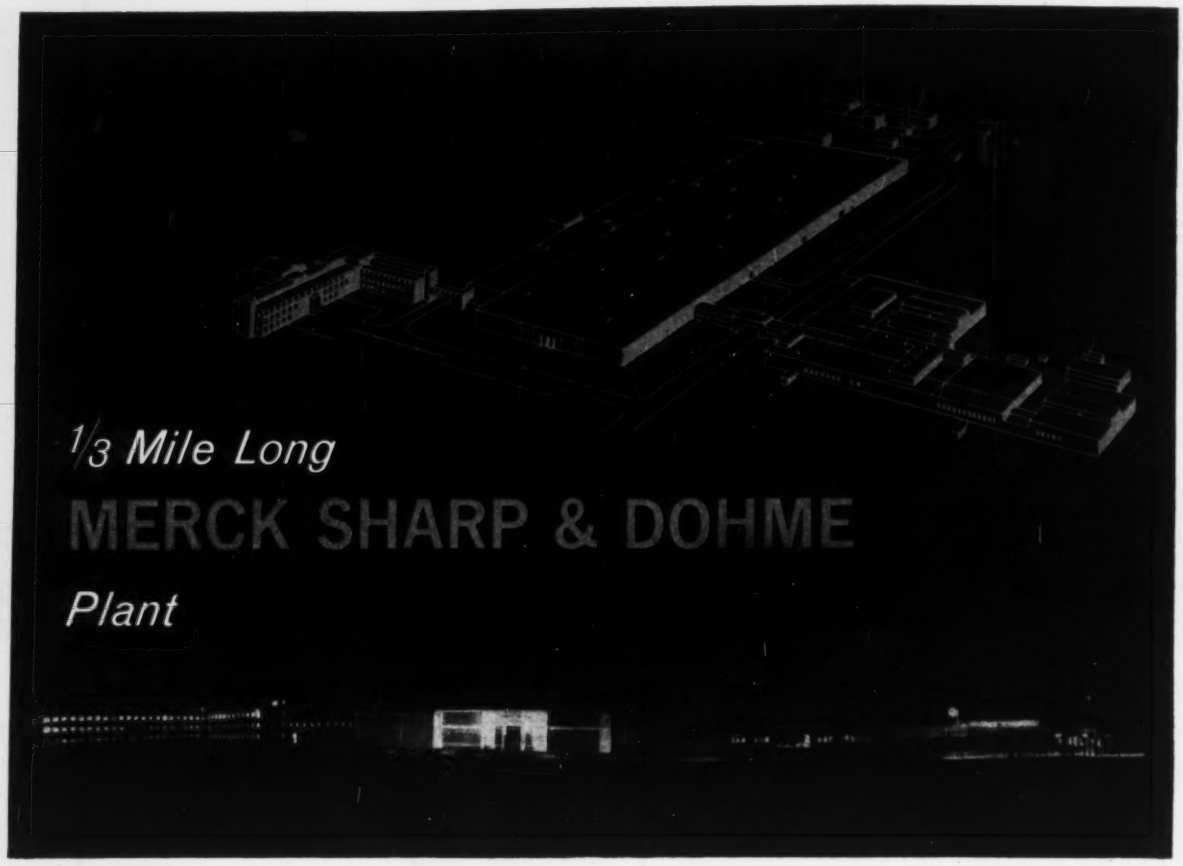
Rock Grip Excavator

When ordering new equipment always specify Firestone tires—available tubeless or tubed.

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1959, The Firestone Tire & Rubber Company



where dependability of pipelines is a must, control is entrusted to JENKINS VALVES

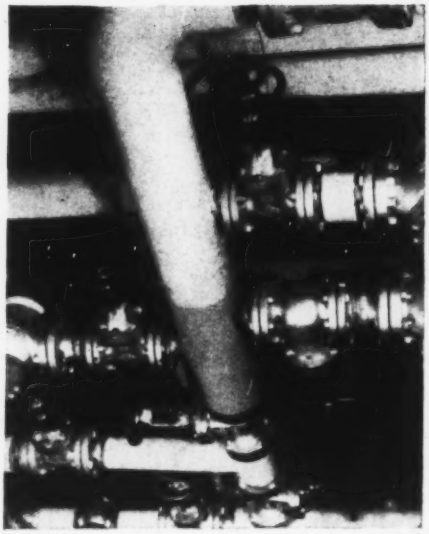
World famous Merck Sharp & Dohme, division of Merck & Co., Inc. not only knows pharmaceuticals and biologicals; they know a lot about valves. They need to! Control of pipelines must be *unfailing*.

That's why you'll find Jenkins Valves on all process pipelines in this West Point, Pa. plant . . . as well as on plumbing, heating and air conditioning lines.

The Jenkins name is not new to Merck Sharp & Dohme. They have been using Jenkins Valves extensively for the past twenty years. The unusually large number of valves installed in the company's seventeen domestic and foreign plants represents a big investment. So you can be sure this experienced valve buyer has found Jenkins Valves both dependable and maintenance free.

Jenkins dependability can save money for any plant or building. What's more, you can specify or install Jenkins Valves at no extra cost. Jenkins Bros., 100 Park Avenue, New York 17.

Sold Through Leading Distributors Everywhere



Jenkins Valves on main steam lines serving the Biological buildings

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

JENKINS SINCE 1864 Jenkins Bros

ENGINEERING NEWS-RECORD

Vol. 163, No. 4 July 23, 1959

Number of copies printed this issue 84,995

CONTENTS

What's Left for Congress? 21
Where Key Bills Stand in Congress 22
CE's Pay Still Lowest, but It's Gaining 23
This Way to Tomorrowland 23
Seaton Defends Desalting Program 24
Another Bracing Failure? 25
Steel for Six Weeks 25
Thin Shells for Church Nave 25
Novel Shops Get Novel Roof 26
Deep Piles Ring Foundation Site 28
Huge Water Spending Coming? 28

FEATURES

Water Construction Booms in California 30
Cranes and Stiffleg Derrick Do a Fast Job 36
Building Backwards Beats Oahe's Shale 42

INTERNATIONAL

Atomic Plant Crane Erects Itself 44
Hitch in India Steel Mill Job 44

NEW PRODUCTS

Coming: Electric Wheel for Contractors 49

MEN AND JOBS

Lauren Grayson Heads AWWA 50

BUSINESS AND FINANCE

Generator Competition Hotter 72
Industrial Building Show Scheduled 72
The Outlook for Money Costs 73

LABOR

What's Next for the Labor Bill? 76
Teamsters Strikes Hit Builders 78

Reader Comment ... 6
Calendar 13
Washington Observer 19
Obituaries 54
Unit Prices 57
Materials Prices 58
Construction Reports. 61
Statistics, Indexes .. 71
Editorials 92

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

A BIG WEEK—Heavy construction contracts this week scored the second highest weekly total reported by ENR this year. Volume is $651.7 million. To date, contracts amount to $12.5 billion, 7% above last year and only 5% below the 1956 record high for the same period.

BIG YEAR FOR GAS—Gas utilities and pipeline companies will spend a record $1.86 billion for construction this year, the American Gas Association says. That would be 4.9% above the 1957 record of $1.77 billion, and 14.9% higher than 1958 outlays of $1.62 billion. By 1962, outlays are expected to go to $2.17 billion.

EMPLOYMENT AND EARNINGS UP—Construction employment rose 131,000 last month to a new 1959 high of 2,971,000, the U.S. Labor Department reports. This is an improvement over a year ago, but the figure is more than 260,000 below June 1956 and 1957. Last official report on earnings put the average workweek at 37.1 hours and average weekly earnings at $113.53 for contract construction workers. (Both are April figures.)

BOND BUYERS WANTED—It's still touch and go with the proposed 17.5-mile crossing of Chesapeake Bay. Last year at this time the chosen contractors were given letters of intent, subject to sale of a bond issue to finance the work. Last week, the same contractors—Merritt-Chapman & Scott, Peter Kiewit, Raymond International, Tidewater Construction—were given a contract, but still subject to the sale of bonds. Unless the bonds are sold by October 23, another contract will have to be negotiated.

FROM DENTISTRY TO REDEVELOPMENT—Choice of a dentist turned land developer as sponsor for a $12-million urban renewal project has split the Redevelopment Authority of Brookline, Mass. One official has resigned; another threatens to. In selecting Dr. Daniel Gevinson of Washington, D. C., the board by a 3-2 vote by-passed nine candidates, including Perini Corp.

DIXON-YATES WINS COSTS—The Supreme Court will probably be the next stop in the long, drawn out Dixon-Yates controversy. The U.S. Court of Claims last week ordered the federal government to pay costs of $1,876,545 to the Dixon-Yates group for cancellation of a contract to supply power to the Tennessee Valley Authority. But odds are the government will appeal the 3-2 decision, which rejected the charge of conflict of interest in the role played by a Budget Bureau consultant during contract negotiation.

ASPHALT

Produced by Esso Standard Oil Company

PROVIDES THREE WAY BENEFITS: Taxpayers, contractors, and motorists – all benefit in three important ways by paving their local roads with Asphalt.

LOWER COSTS FOR THE TAXPAYER. Asphalt can save 10% to 50% in initial construction costs.

EASE OF CONSTRUCTION. Asphalt roads paved in ribbons are completed faster. No expansion joints, forms or curing time required. Contractors can meet faster schedules, obtain contract payments more quickly.

SMOOTHER RIDE FOR THE MOTORIST. Continuous, flexible asphalt paving gives the smoothest ride. Reduces tire hum and vibration to a minimum.

For more information, call or write: Asphalt Products, Esso Standard Oil Company, 15 West 51st St., New York 19, N. Y.

Esso

ASPHALT PRODUCTS

In Industry after Industry..."ESSO RESEARCH works wonders with oil"

WASHINGTON OBSERVER

- AGC hits at stop-and-go roadbuilding
- Air Force trims Bomarc plans
- Public works veto seems likely

● **Costliness of stop-and-go on highway construction will be stressed by the Associated General Contractors before the House Ways and Means Committee as it trys to determine how to finance the multibillion-dollar federal program** (see p. 21).

AGC's spokesman, M. Clare Miller, of the San Ore Construction Co., McPherson, Kan., won't take a stand on which method of financing should be adopted. Instead, he will emphasize that any slowdown inevitably will add to the final cost of the mileage still to be built.

Total cost of the highway program is now put at $60 billion for both Interstate and ABC networks. The federal contribution to this would be about $36 billion. So far, the federal government has paid out only $4.9 billion.

—

● **The Air Force has trimmed its Bomarc Missile base construction program from the 32 planned to 16. And it is scaling down the size and construction cost of individual bases.**

The first base is planned with 112 missile launchers. It will cost roughly $13 million. The next four installations will have only 56 launchers. They will cost some $9 million each. These five bases will be equipped with the Bomarc "A"—a missile launched with a liquid-propellant rocket and requiring elaborate fueling facilities.

The remaining 11 bases will cost an estimated $5 million each. They'll be armed with the "B" model—a longer-range weapon launched with a solid-fuel rocket. Only 22 launchers will be built at each of these bases.

—

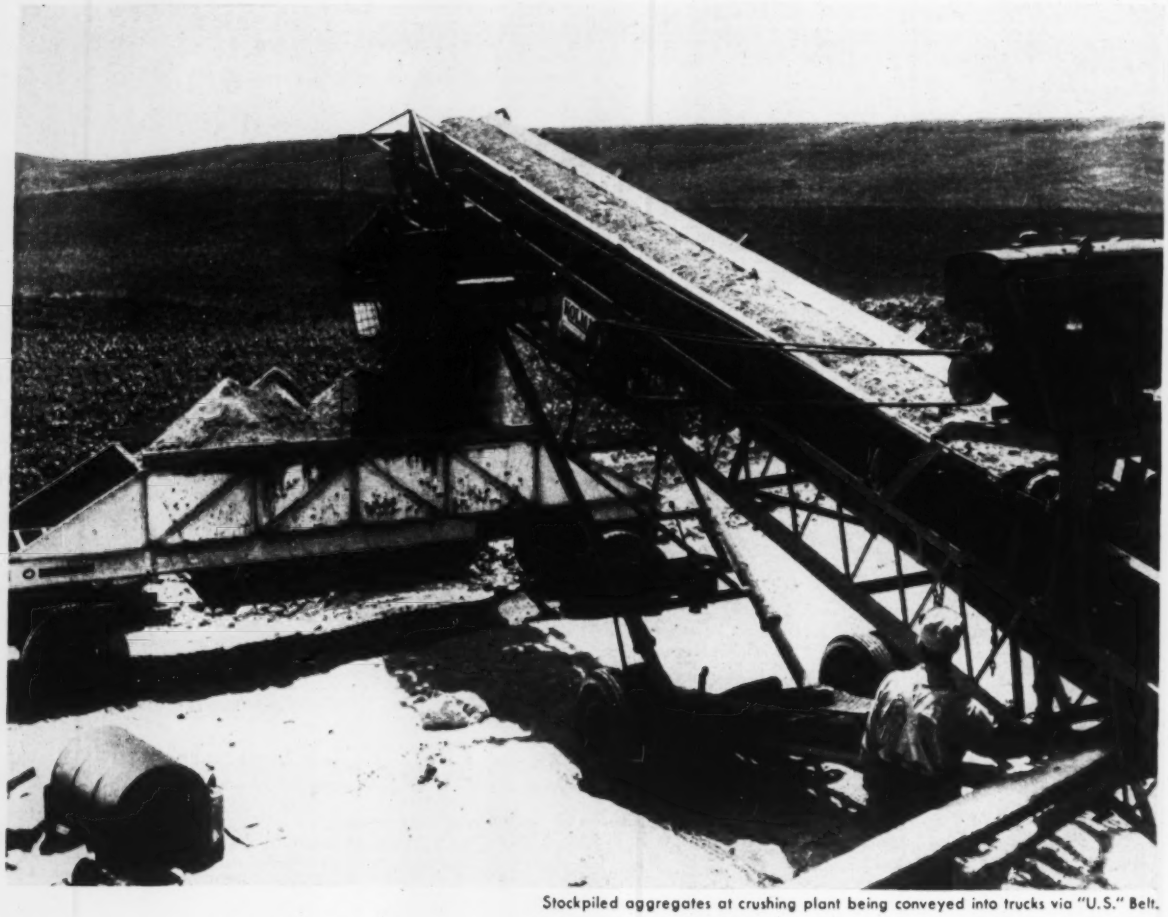
● **Chances of a veto of the public works appropriations bill are increasing.** President Eisenhower is mustering Republican support in an effort to knock out of the money bill the scores of Corps of Engineer and Reclamation new starts written into the billion-dollar measure by the House and Senate (see p. 21).

"Skyrocketing spending must be stopped," the President wrote Rep. John Taber (N. Y.), ranking Republican on the House Appropriations Committee. He said that though the amounts for the new projects the first year are small, they can add up to more than a billion dollars in spending before they're completed.

The President's plea presents Republicans with a problem. The House and Senate Appropriations Committee members who will work out the differences between the Senate and House bills, can only reconcile the two bills. That compromise will still be much more than the President wants. That is why a veto seems to be in the making.

The President can be sure he will be upheld. Then Congress can go to work again and vote a measure the President can take.

US RUBBER CONVEYOR BELTS



Stockpiled aggregates at crushing plant being conveyed into trucks via "U.S." Belt.

"No maintenance, no repairs, no downtime,"

SAYS CO-OWNER OF BIG CRUSHING PLANT

Mr. John Weelborg (of Weelborg Bros., Dell Rapids, S. D.) is co-owner of a firm engaged in crushing aggregates and in chip-surfacing roads.

The rock (dug from nearby pit) is bulldozed into stockpiles. 5-ply belts in widths of 36", 30", 24", 20" then carry the rock to the crusher for processing. These same belts carry crushed rock and sand to trucks for transportation to road-building sites.

"In the 20 months since these belts were installed," says Mr. Weelborg, "there has been no maintenance, no repairs, no downtime. *We couldn't ask for better belts.*"

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

This installation was handled by "U. S." Distributor W. S. Nott, Minneapolis

US RUBBER

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

What's Left for Congress?

- **The President's veto has been king so far, despite big Democratic majorities in both houses of Congress.**
- **But the Democrats have some more legislative plans that may force the President to accept some things he doesn't want.**

President Eisenhower says he has "no bed of roses" in dealing with a Congress dominated by the opposition political party, but to date he has not been stuck by many thorns.

A look at the performance of Congress this session shows that the President has had his own way on all issues but one—the Senate rejected his nomination of Lewis L. Strauss to be Secretary of Commerce.

Indeed, Democratic leaders in Congress have taken the more ambitious programs and ideas advanced by a party heady with victory last November and tried to modify legislation to make it "veto proof." And still they have lost. Mr. Eisenhower has won by veto or Democratic back-tracking. Examples:

- The housing bill is now being trimmed to meet the objections advanced in his veto message.
- The federal-aid airport bill was cut back to only $63 million a year for apportionment to municipalities from the more than $100 million a year the Democrats originally proposed.
- With the President's backing, Senate Republican leaders won a compromise from Democratic leader Lyndon Johnson on the foreign aid program. The outcome: A Democratic bill providing for long-term commitments to underdeveloped countries was diluted, and the total outlay was cut.

These are only the major measures. The President's voice and veto pen have helped to shape other legislation still being considered in the first session of the 86th Congress. Senator Johnson acknowledge "the veto is king," despite the Democratic majority in both houses of Congress.

- Mr. Eisenhower doesn't like the Democratic bill sponsored by Sen. Paul Douglas (D., Ill.) for federal aid to depressed areas. So neither the $389-million Senate bill nor the $251-million House bill will become law.
- Mr. Eisenhower doesn't want to raise the minimum wage to $1.25 an hour and extend coverage. So no bill will be sent to him this year.
- Mr. Eisenhower wants to increase motor fuel taxes to replenish the Highway Trust Fund, and though Democrats have been opposing the idea for seven months, this week Congressional leaders began considering such legislation.

How long will the President's strength, or luck, hold out? It seems this week that there is little reason to believe he will not continue to dominate.

However, Congress in its closing days is preparing to send him some legislation that will try his strength, and his flexibility.

The President would like to accept much of what is being written into legislation, and veto only individual items. That, of course, he cannot do. Most Presidents have wanted the item veto. But the one real weapon a Congressman has is to make a President take the bitter with the sweet.

Here are four major issues that President and Congress are jockeying over:

- **Public works**—The huge public works appropriation bill for fiscal 1960 is now in a Senate-House conference committee.

Both the Senate and House versions call for many new construction starts against the President's wishes. Included in the Senate bill is $2.4 million to start federal construction of power facilities at the Trinity Project in California. The Administration has repeatedly recommended private power development by Pacific Gas & Electric Co. at Trinity.

Veto of the bill, plus the delays in attempting to override it or pass a new bill, would postpone the start of any new construction projects, though such a delay may not have any effect on federal projects already under construction. A temporary appropriation measure (effective until July 31) has been enacted to provide funds for these projects at the same monthly rates as would be in the new appropriation bill. After that, Democrats could put on a squeeze.

The Senate bill calls for $932.5 million for the army engineers, compared with the House recommendation of $863.9 million. Of this amount, the Senate allowed $710 million for construction ($658.8 million by the House). The Senate also approved $142.3 million in construction funds for the Bureau of Reclamation, (the House, $128.5 million).

- **Highway financing**—The House Ways and Means Committee is holding public hearings this week.

Last week, a top government official deeply involved in the road program met with the House Ways and Means Committee in executive session. He privately reported that the committee was still not in agreement as to the best way to finance the program.

After the public hearings, the committee is expected to go into executive session. A definite solution probably won't come before early August.

Just how Congress and the White House will eventually agree on a money-raising scheme for the road program has been the subject of speculation for months. The White House wants a hike in gasoline taxes by 1½ cents. Congress balked completely at first. There are signs now, however, that the matter must be compromised. A levy of new taxes up to one cent a gallon on motor fuels now, with earmarking of additional excise taxes for the Highway Trust Fund starting next year, has been rumored.

Bureau of Public Roads is in a state of uncertainty. It expects Congress to provide enough money to keep the program running. But it isn't sure at what level. That makes planning difficult. Highway Administrator Bertram D. Tallamy says no steps have been taken to trim back the program so far.

- **Housing**—Mr. Eisenhower's veto of the housing bill has Democrats in a quandary. The veto almost certainly would be sustained by the House if it voted, and in the Senate any attempt to override would be touch and go.

The Democrats have decided to play

for time. Instead of taking up the veto message for a vote, Senator Johnson has referred it to the Banking and Currency Committee, whose housing subcommittee—headed by Sen. John Sparkman (D., Ala.)—will begin an intensive set of hearings on July 23.

Senator Sparkman and the Democrats on the subcommittee intend to force Administration housing officials to defend every line of the veto message. But this must be put down as window dressing—an attempt to remedy some of the political damage done to the Democrats.

What worries the Democrats most from a political viewpoint is that, in an attempt to get a bill past the President, they bargained away many details that were politically desirable for them.

Republicans have introduced Mr. Eisenhower's new, minimum housing bill proposals. But Democrats are barely able to find printable words to discuss it in public.

The Democrats will probably try to enact another bill, considerably more costly than the new GOP proposals but still less costly than the vetoed bill.

• **School construction**—The Murray-Metcalf bill (HR 22) to provide $1.1 billion a year for four years for classroom construction and teachers salaries has little chance of passage, and if passed would certainly be vetoed.

The Administration's bill (HR 4268), under which the federal government would pay half the interest charges on school bond issues, has not gotten beyond the hearing stage in the House and is considered dead. Arthur S. Flemming, Secretary of Health, Education and Welfare, still holds out for this bill as the only kind of school construction proposal the President will not veto —because it would cost no money in fiscal 1960 and would spread the charges out over the next 25 years.

Senate Democrats are working on a compromise that shapes up like this: The federal government would provide $500 million a year for three years in matching grants to the states for classroom construction only. It will contain a needs formula of some kind, which is one of the things the President has insisted upon in past school bills.

Where Key Bills Stand in Congress

Public Works (HR 7509): Fiscal '60 appropriations totaling $1.26 billion, including starts President opposes.
Status: Now in conference.
Outlook: Veto possible.

Minimum Wage (S 1046, HR 4448): Increases minimum wage from $1 to $1.25 an hour, and extends coverage to certain retail workers.
Status: Senate labor subcommittee ok'd.
Outlook: Little chance, Administration is opposed.

Highway Financing (HR 7963, HR 7939): First bill boosts motor-fuel taxes from 3 cents to 4½ cents a gallon; second boosts ½ cent for one year, then to 4 cents total for two years.
Status: Ways and Means Committee started hearings this week.
Outlook: Good for some variation.

Area Redevelopment (S 722, HR 3505): Authorizes low-interest loans for developing industry in chronically unemployed areas.
Status: Senate passed $397-million bill.
Outlook: No chance.

TVA Bond Financing (HR 3460): Permits TVA self-financing, up to $750 million, of new power facilities through use of bond issues.
Status: In Senate-House conference.
Outlook: Veto possible.

San Luis Irrigation (S 44, HR 7155): Construction of San Luis unit of California's Central Valley project.
Status: Passed Senate; House bill has been approved by Interior Committee, is pending before Rules Committee.
Outlook: Good.

San Juan, Navajo (S 72, HR 2352): Construction of San Juan-Chama and Navajo units of Colorado River storage project.
Status: Passed Senate, but bills are dying in House Interior Committee.
Outlook: No chance.

Trinity Power Project (HR 5499, HR 5521): Authorizes private power development by Pacific Gas & Electric Co. of Trinity Dam in California's Central Valley project.
Status: Hearing scheduled and quick vote due this week before House Interior Committee.
Outlook: Dim. Senate has included funds for federal power development at the site in its version of public works appropriation bill.

River Basin Planning (HR 3704): Permits President to establish separate commissions to coordinate planning.
Status: Pending before House Interior Committee.
Outlook: No chance this year.

River Basin Planning S 584): Gives public power groups advantage in getting FPC licenses for hydroelectric projects in river development.
Status: Pending before Senate Commerce Committee.
Outlook: No chance this year.

Sewage Aid (HR 3610): Doubles federal grants to total $100 million a year for communities building sewage treatment plants.
Status: Passed the House; Senate hearings due soon.
Outlook: Continuation of $50-million program; Administration opposes increase.

Bonneville Power Corp. (S 1927): Establishes a federal power marketing agency for Pacific Northwest; would replace present Bonneville Power Administration.
Status: Hearings held before Senate Subcommittee on Rivers and Harbors.
Outlook: No chance this year.

Tollroad Reimbursement (HR 6303): Repays states for certain tollroads included in Interstate System.
Status: Ready for House action, after user-tax issue is settled.
Outlook: Little chance this year.

Labor (S 1555): Amends Taft-Hartley Act accenting full disclosure of union activities, and so-called "bill of rights" for individual workers.
Status: Senate passed, House Labor Committee writing bill.
Outlook: Only fair, because of differences over union regulation clauses.

Housing (S 2378, HR 8181): GOP version of the vetoed Democratic S 57, to provide $5 billion in new FHA insurance authority, $600 million for urban renewal, $200 million for direct college housing loans.
Status: Senate hearings start this week.
Outlook: Democrats can't override S 57 veto, probably can vote a bill bigger than new Republican versions.

School Construction (HR 22): Provides $1.1 billion a year for four years for construction and teachers salaries.
Status: Approved by House labor unit.
Outlook: Dim, but Senate may vote a cut down version.

Hospital Construction (HR 6769): Approves money for public facilities.
Status: Both houses have passed bills; legislation in conference.
Outlook: Good, with final money totaling around $150 million.

Interstate Formula (HR 5950): Extends until fiscal '68 the cost estimate for completing Interstate System, which is used as the basis for apportionments.
Status: Ready for house action, but awaiting financing legislation.
Outlook: Action almost certain.

Military Construction (HR 5674): Authorizes $1.2 billion for fiscal '60.
Status: In conference.
Outlook: Certain.

Military Construction: To provide $1.6 billion to cover authorizations.
Status: House committee has finished hearings.
Outlook: Certain.

CE's Pay Still Lowest, but It's Gaining

- **Construction supervision shows biggest advance in salary, latest NSPE survey shows.**
- **Government employment accounts for lower pay for civils, but that gap is closing.**

Civil engineers remain the lowest paid group in the engineering profession despite a jump in median income from $8,750 in 1956 to $9,620 in 1958. The median income for all engineers is now $10,000.

So reports the fourth biennial "Professional Engineers' Income and Salary Survey" published by the National Society of Professional Engineers. The survey is based on an analysis of 19,240 questionnaires returned by NSPE members. It covers the years 1956-58.

Not only did the average civil engineer earn less than other engineers, but for civils with 25 or more years of experience, median earnings were often several thousand dollars lower than those of similarly experienced engineers with other specialties.

Reason: A large proportion of civil engineers work for government agencies, where the ceiling on earnings is much lower than in other fields.

But things are improving. Construction supervision, which has been the lowest paid engineering activity during the past six years, showed the greatest gains between 1956 and 1958. The survey attributes this to the increases granted government engineers, many of whom are engaged in this work.

And median incomes in excess of $10,000 were found in only three fields—one of them, construction contractor firms. (The others: industry and consulting firms.) The survey points out that construction and consulting are the two fields with the largest proportion of self-employed engineers, whose average income is well above that of salaried engineers.

Although earnings were high at all levels of engineering employment, gains since 1956 were generally smaller than those reported in NSPE's first three surveys. Median income is up 5% in the 1958 survey, compared with a 9% increase in 1954 and 12% in 1956.

The drop was particularly sharp at the highest level. The upper quarter showed only a 3% gain, compared to 10% in 1956; and in the top 10% group, earnings were actually down 1%, compared to a 9% rise in 1956.

Only 10% of the questionnaires listed incomes below $7,040. At least 75% of those participating in the survey reported incomes of at least $8,250, and 1% earned at least $19,680.

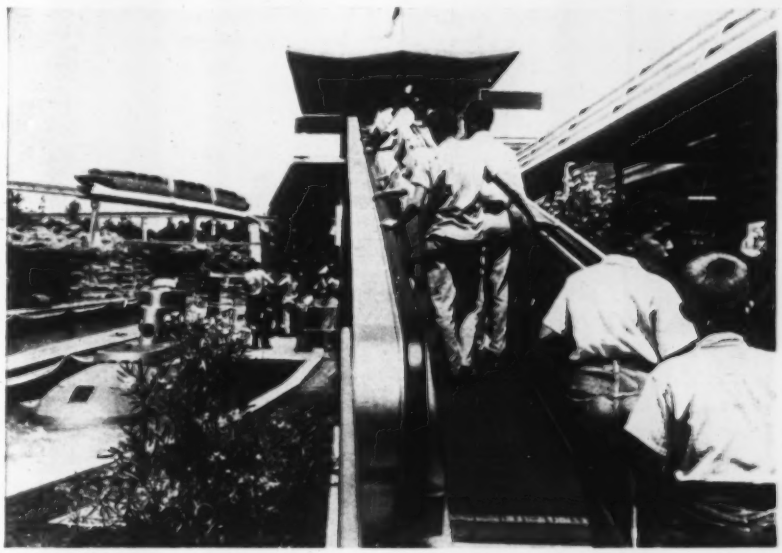
Chemical engineers reported the highest median earnings—$11,170. Next were mining metallurgical engineers, $10,500; electrical engineers, $10,270; mechanical engineers, $10,250; and finally, civil engineers.

Between the first survey, in 1952, and this one, the median earnings of engineers rose from $7,850 to $10,000, an increase of 27%. In the period covered by the latest survey, however, gains have tended to be greater for the lower-salaried groups. Thus, civil engineers gained 10% between 1956 and 1958, and electrical engineers jumped 9%, while chemical engineers registered only a 2% gain.

One of the features of the 1958 report is a detailed analysis of salary trends recorded in the four surveys since 1952. Here are some of the major trends:

- **Regional salary differentials seem to be decreasing.** Incomes are still highest on the East Coast, lowest in the Plains—but the gap is narrower. In the West, employees of construction contractors enjoyed the highest earnings.
- **Various fields of employment are tending to pay similar salaries for comparable work.** In particular, the gap between earnings in industry, educational institutions and the federal government was narrower in 1958 than ever before.
- **Engineers working on the business side experienced smaller relative gains** than those in other types of employment. But engineers in executive-administrative positions had the highest median income—$12,480.
- **Younger engineers continued to register salary increases,** but their gains are now in line with those of more experienced engineers. In the past, they were considerably higher.

The survey points out two facts to be considered when evaluating the income statistics: Figures are compiled from the 41% of NSPE membership who replied to the questionnaires—experience of other income studies indicates this "self-selection" often results in over-representation of the "successful" at each level; on the other hand, respondents were classified according to their principal source of income only—but part-time work appears to be frequent.



This Way to Tomorrowland

Walt Disney's monorail in Disneyland, Calif., uses a moving ramp that can take as many as 3,600 passengers an hour to its "station" platform. A larger unit with twice the capacity moves from platform to ground level. The angle of incline is 11 deg. The conveyors are respectively 30 and 42 in. wide with belts on slider-type supports—no rollers. The supporting structure has a clear span of 36 ft. A 15-hp motor moves each belt. Stephens-Adamson Mfg. Co. of Aurora, Ill., produced the moving ramp.

Seaton Defends Desalting Program

- **Says critics' cost comparisons are meaningless; outlook is good, he tells AWWA convention.**
- **First plant will be built at Freeport, Texas; seven California sites being considered.**

The U.S. Department of the Interior took a poke last week at seawater conversion skeptics who have questioned the optimism of Interior's Office of Saline Water. Secretary Fred Seaton delivered a speech by proxy to the American Water Works Association's 79th annual convention in San Francisco accusing some critics of making meaningless comparisons.

"Comparing conversion costs with water rates is like comparing apples and oranges simply because both are round," he declared. "Many water rates are based on development and construction costs of 25 or more years ago. Some water utilities were financed, not by water revenues, but by general obligation bond issues. In other words," the Secretary said, "property taxes were used to foot the bill instead of profits from the sale of water."

Mr. Seaton told delegates that in computing conversion cost, Interior figures in all capital investment, including the cost of land, equipment, construction and engineering; interest; fuel, at 25 cents per million Btu; facilities, buildings and maintenance materials; operating labor; taxes; and amortization based on 20-year plant life.

The cost thus figured should be compared, Mr. Seaton indicated, not with present rates, but with the cost of developing new sources of water supply. "Many cities which now enjoy low water rates may be in for a jolt," he said, "when they discover the cost of developing and impounding additional supplies."

The Secretary reiterated his prediction that the seawater conversion plant the department will build on the Gulf Coast will produce fresh water for $1 per thousand gallons ($327 per acre-ft). The use of traditional waterworks financing procedures might bring such a price down even farther and make it competitive in some areas, he suggested.

"Consider financing the construction of a conversion plant by a general obligation bond issue," he said, "thereby removing capital investment from cost estimating procedures. On that basis, the cost of converted water would be slashed by 50%, making fresh water available from the sea at about 50 cents per thousand gallons."

Secretary Seaton also announced further decisions regarding the federal government's $10-million salt water conversion demonstration plant program. The first of the five conversion plants will be built at Freeport, Tex., the Secretary said. He said the plant would incorporate the long tube vertical multiple distillation process developed by the W. L. Badger Co. and would produce a million gallons of fresh water daily (ENR Mar. 12, p. 24).

Mr. Seaton also said seven California locations are getting further study in the selection of a West Coast site for a 1-million-gallon-a-day seawater conversion plant operated by nuclear heat.

The decision to use nuclear heat is the outgrowth of a study program undertaken by Fluor Corp., Los Angeles, under joint sponsorship of the Interior Department and the State of California. Mr. Seaton said Interior is asking the Atomic Energy Commission to supply a low-temperature low-pressure atomic reactor as a heat source for the West Coast plant. AEC and Interior representatives began meeting last week, he said, to work out specifications for the plant.

• **Equipment certification** – Chances look pretty slim for initiation of an AWWA equipment certification program this year. But a procedure may be ready for adoption by the association's board of directors at its meeting next January.

The procedure adopted by AWWA last September is out altogether. The committee, appointed last January to try to end the stalemate resulting from manufacturer opposition to the procedure as adopted, decided to start again from scratch. The new procedure would place the burden of enforcement on the manufacturer rather than on AWWA.

The new plan went last week to the AWWA directors and to the directors of the Water & Sewage Works Manufacturers Association. But a special committee appointed by the manufacturers association has to study the procedure and report to their directors before any accord can be reached between AWWA and W&SWMA.

Certification is not unanimously favored in either organization. There is some feeling that nothing is needed beyond the present setup, under which a purchaser can demand from a manufacturer an affidavit of compliance with AWWA equipment standards already in existence. And some manufacturers are still wary of stepping into what they feel might be violation of federal anti-trust laws.

• **California water**—Commenting on California's ambitious water development program (see p. 30), M. J. Shelton, San Diego consulting engineer and former deputy director of the California Department of Water Resources, warned that the state must still rally public opinion behind the $1.75-billion bond issue due for a vote in November.

In this connection F. H. Eastman, secretary of the East Bay Municipal Utility District, described EBMUD's successful campaign for passage of a $252-million issue in 1958. He urged the use of opinion polls to search out prevailing attitudes and recommended review of bond programs by a consulting engineer firm, or other outside agency, to demonstrate justifiability to the voters.

• **Blue sky**—In a session on "blue sky thinking" greater use of automation was forecast.

V. A. Applevard, chief of water operations for Philadelphia, said Philadelphia's new telemetering system will scan 94 intelligence points to alert a central operation station when any point goes "off normal."

Mr. Applevard feels that the next step of automation is to insert a computer that would give instantaneous feedback information to correct automatically off-normal distribution pressures.

He also looked for speeding of purification processes to cut down on plant size and predicted that, through metals and plastics research, completely corrosion-proof and break-proof pipe will be developed. This is important because about two-thirds of the water system's capital dollar is spent in underground facilities, he noted.

• **Mr. Waterworks retires**—The convention was something of a tribute to one of the association's most distinguished members—Harry E. Jordan, one-time AWWA president and for the past 23 years its executive secretary. Mr. Jordan, who retires September 1, saw this last meeting set an attendance record of close to 3,200. Mr. Jordan will be succeeded by Raymond J. Faust, his assistant.

New AWWA president is Lauren W. Grayson, general manager and chief engineer of the Glendale, Calif., Public Service Department (see p. 50). He succeeds Lewis S. Finch.

Steel arches for high school gym at Beaver, Pa., toppled during erection.

Another Bracing Failure?

Add a group of steel arches at Beaver, Pa., to the long series of recent sidesway failures that have been plaguing erectors. American Bridge Division of U. S. Steel Corp. was erecting them for the Beaver Area Senior High School gymnasium when the ribs suddenly toppled to one side.

Five men who rode them to the ground were injured. The men had been connecting a knee brace to an arch rib when the framing fell.

The gymnasium was to be about 110x205 ft. Its framing consisted of five, two-hinged, tied arches with a 204-ft span. Spaced 27 ft c-c, the arches were pinned 19 in. above the floor and had a rise of 37 ft 3 in. They were tied under the floor with a 2¾-in. dia high-strength rod.

The center rib was a 36 WF 170; the others were 36 WF 150. Below the crown of each, a beam spanned between opposite sides of the rib. The 14-in. wide-flange purlins, spaced 8 ft 9 in. c-c and carried by the rib, were knee-braced to this beam.

The ribs were erected on two timber falsework bents. Since no lateral bracing was used, the framing was guyed to provide stability against lateral movement during construction.

When the failure occurred, four of the five arches had been set in place and final bolting of purlins and knee bracing was practically completed. An adjoining beam-and-column structure to which the gym was to be attached had not yet been started. Investigations are under way to determine the cause of the failure.

Branna Construction Co. is the general contractor. B. J. McCandless, Elwood City, Pa., is the architect.

Thin Shells for Church Nave

Thin-shell saddles of reinforced concrete will form the nave of a Lutheran church planned for construction late this year in Broken Arrow, Okla.

The $180,000 church and a church school building adjoining it will provide 6,500 sq ft of floor space. An 80-ft-high, pointed concrete spire will dominate the buildings.

Ryan & Roark of Tulsa, Okla., the architects, are preparing detailed plans for the 10-acre development. A contractor has not been selected. Construction should start some time this year.

Steel for Six Weeks

That's how long equipment plants can stay open

Major producers of construction equipment and machinery say they can withstand a steel strike of up to six weeks. But some of them add a few ifs: If they are able to buy specialty steel from warehouses; and if their suppliers don't run short.

Earlier, contractors had reported their steel inventories could only sustain up to four weeks of construction work (ENR July 2, p. 74).

Some equipment companies declined to give details on their inventories and those of their suppliers. "To talk about steel inventories might reveal to the union just how vulnerable the fabricating companies may be, thus aiding the union in its bargaining," one official says.

Those who will talk tell pretty much the same story, however. LeTourneau-Westinghouse, producer of heavy earth-moving equipment, reports about a six-week steel supply on hand for normal production rates. But the company says it will have to get some specialty items from steel warehouses. The company believes its larger suppliers of engines, transmissions and bearings can be depended on during the strike. "It's the little ones we don't know about," he said.

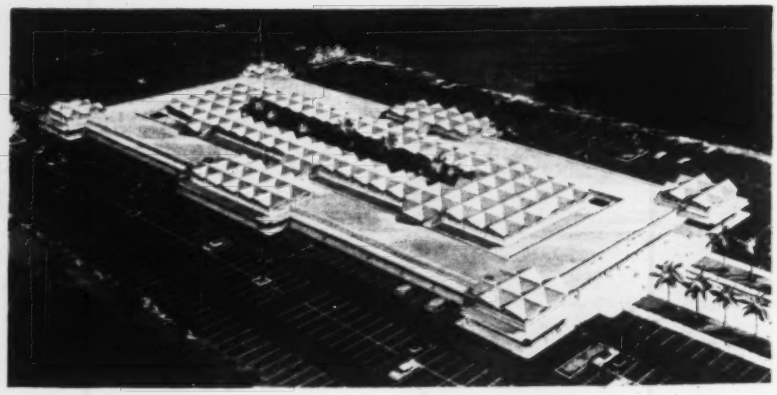
Officials at Baldwin-Lima-Hamilton's Madsen Works in La Mirada, Calif., say they'll be in trouble if the steel strike runs beyond six weeks. They report an 8- to 10-week steel inventory, but estimate it will take at least two weeks to get deliveries after the strike.

Madsen Works buys most of its steel from the mills, but also buys from steel warehouses. It expects no trouble in getting steel items from warehouses. Warehouses in the Los Angeles area report a four-month supply.

Madsen, which makes asphalt batching plants, mixers, dryers, concrete finishing machines, pump valves and washers, does not plan to cut back production. Should a steel shortage shut down the plant, it would take about three days to resume full production.

Thew Shovel Co., Lorain, Ohio, says its inventories will sustain 45 days of production, with some help from steel warehouses. The company reports that its component suppliers, rather than the warehouses, are most likely to slow up production. Thew suppliers report steel stocks sufficient for 30 days.

Thew, which makes power cranes, shovels and front-end loaders, has no plans to cut back production. But the company will stretch out production by postponing a vacation shutdown.



Novel Shops Get Novel Roof

Bazaar International—a collection of some 145 specialty and foreign import shops—is under construction at Riviera Beach, just north of Palm Beach, Fla.

The $2-million shopping center will have three different types of roof structure.

The roof of the one-story sections is a metal-pan-formed ribbed concrete slab. The roof over two-story areas is lightweight concrete, constructed in two forms. One is a two-way folded plate in a pyramid shape; the pyramids line up with each other in sequence, with the valleys touching at the base. The other type is a serrated roof.

The metal-pan slab covers 77,000 sq ft, including some 15,000 sq ft of second floor offices it underlies as a floor.

The pyramid roof area exceeds 50,000 sq ft, including six perimeter pavilion-type areas plus end sections of an interior landscaped court.

The 24,000 sq ft of serrated roof are located only along the long sides of the interior landscaped court.

The reinforced concrete columns that support the roof are 20 ft on centers; so, spacing peak to peak of the roof sections also is 20 ft. The sections have a 30-deg pitch with the horizontal.

Glazed concrete gable grills are used for the second story. Rectangular clerestory glazed grills and precast-concrete decorative columns form the exterior of the first story.

The building is 600 ft by 280 ft. The interior court will serve as a garden for the display of merchandise and for dining patios.

Joseph Mass of Palm Beach and Boston is the developer. Alfred Browning Parker of Miami is the architect. Norman Dignum & Associates of Miami are the engineers. Butler & Oenbrink of Palm Beach is the prime contractor.

Around the Country . . .

• **Big school plans**—New York City's Board of Education has proposed a $100-million, 10-year building program that includes 68 new school projects. The program depends on voter approval next November of a $500-million school bond issue.

• **Newark goes underground**—Construction will start by the end of this month on a 1,031-car underground garage beneath a park in Newark, N. J. The $5.6-million project is scheduled for completion at the end of next year.

• **There's no law, but**—Homebuilders in Norfolk, Va., may have to reserve a school site in every new subdivision with 60 or more homes. There are no laws requiring this but Mayor W. Fred Duckworth wants to try.

• **Catch as catch can**—The federal government is suing two small South Carolina towns, claiming they are the successors to sanitary districts that failed to repay federal loans received in 1946 to help plan sanitary facilities. The facilities are built and the districts are dead; that leaves the two towns as the only targets in the government's effort to collect about $40,000.

• **Still reaching**—Television station WHAS, Louisville, is still trying to get permission to build a 1,859-ft-high transmitting tower—it would be the world's tallest (ENR June 5, 1958, p. 17). Hearings before the FCC have been recessed until September. But WHAS is used to waiting—it's been trying to build the tower for five years.

Safe Water for All Is UN Group's New Target

The United Nations' World Health Organization has decided to devote most of its effort to a single program: Provision of safe water for all people.

After more than 10 years of battling malaria and filth diseases, WHO has decided that the water supply problem—long its number one concern—will have to receive almost all its attention.

There was a distinct note of disappointment in the recent report of WHO's director-general to the Twelfth World Health Assembly in Geneva. He wrote: ". . . in its effort to produce an all-inclusive program of sanitation . . . WHO has failed to make really substantial progress on any front. It resources . . . have been stretched."

Now, claiming that hundreds of millions of people are still without safe drinking water in ample quantities, WHO begins a concerted drive with hopes of "great results."

No precise cost figure for the program can be made, but it is expected to be on the order of $25 billion. WHO will encourage the establishment of revolving funds in countries involved. Communities could borrow costs of construction from the fund. It is also proposed that a voluntary fund be created from contributions out of which planning costs could be met by needy countries.

WHO will attempt to provide consultants and train specialists. It will assist in legal, financial and administrative planning of needed water supplies. Then it will advise on operation and management.

WHO has labored since 1948 in the field of public health as an agency of the UN (see "What Is WHO?" ENR July 31, 1952, p. 50).

Private, Public Housing Starts Climb in June

Housing starts increased to 136,000 units in June, the U. S. Bureau of Labor Statistics reports. However, the total fell 1,000 units short of the April high for the year.

Private and public housing shared in the June rise.

Private starts edged up to 131,200. That is a seasonally adjusted annual rate of 1.37 million, compared to the 1.34 million rate estimated for May. The six-month total of 690,700 private starts is 39% above a year ago. The BLS also revised upward the March total to 118,100 units, raising the annual rate to 1.4 million for that month.

Public starts in June climbed to 4,800—1,400 more than May but only 41% of the total for June, 1958. The six-month total of 18,800 is one half the 1958 count.

HOW TO HANDLE WET JOBS

#49 of a series

Project: Little Rock Sewage Treatment Plant, Little Rock, Ark.
Contractor: Forcum-Lannom Inc., Dyersburg, Tenn.
Engineers: Burns & McDonnell, Kansas City, Mo.

Control 30 ft of ground water in coarse sand as wellpoints . . .

Keep Deep Cut Dry Close to Rising River

In pervious sand near the Arkansas River, Forcum-Lannom required a deep excavation going down 30 ft below ground-water table. Prior experience had indicated the area to be a difficult one for dewatering by the wellpoint method. A high pumping head, long discharge lines and a rising river level were among the problems.

• **Photo shows** what happened. The contractor had clear sailing as a 2-stage wellpoint system designed by Griffin engineers kept the excavation safe and dry. The lower-stage pumps pushed the water vertically a distance of 45 ft and then through 600 ft of discharge pipe to the river.

• **Ground water was held** below subgrade through 7 months of continuous pumping, with river level fluctuating 10 ft.

GRIFFIN WELLPOINT CORP.

SALES • RENTAL • CONTRACT

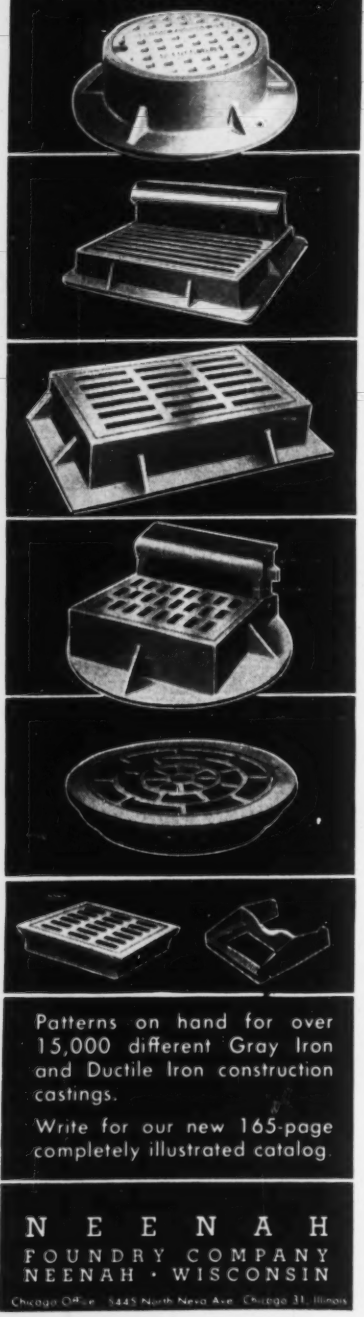
GENERAL OFFICE: 881 East 141st St., New York 54, N. Y.

Branches: Jacksonville, Fla. • West Palm Beach, Fla. • New York, N. Y. • Hammond, Ind. • Houston, Tex.
In Canada: Construction Equipment Co., Ltd., Toronto • Montreal • Edmonton • Vancouver
In Venezuela: Drew Bear & Sons C.A., Caracas • Maracaibo

NF

CONSTRUCTION CASTINGS OF

★ SOUND QUALITY
★ SUPERIOR FINISH
★ SOLID VALUE
DELIVERED ON TIME

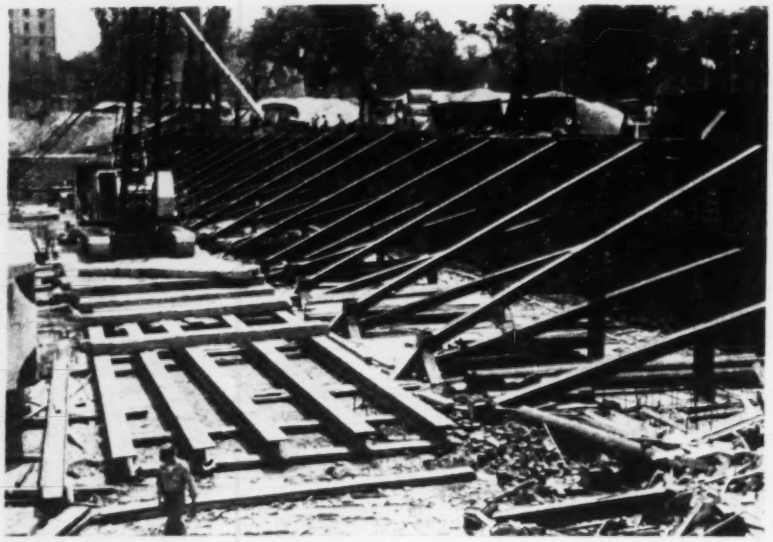


Patterns on hand for over 15,000 different Gray Iron and Ductile Iron construction castings.

Write for our new 165-page completely illustrated catalog.

NEENAH
FOUNDRY COMPANY
NEENAH • WISCONSIN

Chicago Office: 5445 North Neva Ave., Chicago 31, Illinois



Deep Piles Ring Foundation Site

Steel H-piles were driven as deep as 104 ft for the retaining wall around the site of the $64-million House of Representatives Building now being erected opposite the U. S. Capitol in Washington, D. C.

Two factors determined the depth of these piles: the mushy ground on which the building has to be founded; and the slope of the terrain. Because of a 30-ft difference in elevation between opposite sides of the site, the retaining wall varies in height from 20 to 50 ft.

Designed for pressures as high as 1,500 psf, the wall is made up of steel H-piles, 5 ft c-c, with oak planks between them. It is braced with H-beam wales and rakers. This steelwork will be removed after the building is finished.

The reinforced concrete foundation slab is 30 in. thick. It is being concreted at varying rates, averaging about 300 to 400 cu yd per day.

The structure will be 720x450 ft. It will have four stories and a penthouse above ground and a basement, subbasement and two garage floors below. Bethlehem Steel Co. will supply and erect the building's 23,000-ton steel frame.

Harbeson, Hough, Livingston and Larson, Philadelphia, are the architects. Shelton and Stanford, Atlanta, are the structural engineers. McCloskey & Co., Philadelphia, is the general contractor.

Huge Water Spending Coming?

Big increases in federal and local spending to meet coming demands are projected in studies of future water resources in the U. S. issued this week by the Departments of Commerce and Interior.

The Commerce report predicts an additional $214.1 billion will have to be spent by 1975 for construction of needed water resources projects of all types.

Another report, however, issued by Interior's U. S. Geological Survey, indicates it may not be profitable to make such investments on river basins nearing their ultimate economic development. The report points up the possibility that maximum stream flow benefits from additional reservoir construction may soon be reached, if not already exceeded in certain basins—particularly in the West.

Commerce reports that total U. S. water resource investments of $150.7 billion in 1954 must be increased to $290.8 billion by 1975. This will call for $140.1 billion in new projects plus $74 billion to replace obsolete facilities.

The needed investment is broken down by the report this way: water supply—$89.6 billion; sewage and industrial waste facilities—$73.7 billion; power generation—$18.5 billion; irrigation—$9.3 billion; navigation—$8.8 billion; and flood control—$9.5 billion.

The Geological Survey report points out that increasing evaporation from added reservoirs can offset improved stream flow advantages by reducing the total flow.

In another report USGS says, "Although the number and capacities of U. S. reservoirs still is rising rapidly, the point of ultimate development for hydroelectric power, irrigation, flood control and navigation may be seen on the horizon."

The Taft Memorial stands on RAYMOND FOUNDATIONS

ARCHITECT
Douglas Orr
New Haven, Conn.

CONSULTING ENGINEER
Henry A. Pfisterer
New Haven, Conn.

CONTRACTOR
Chas. H. Tompkins Co.
Washington, D. C.

Raised in honor of a great American, this 100 foot high carillon tower was recently dedicated in Washington, D.C. to the memory of the late Senator Robert A. Taft. Contributing to the permanence of the monument is a foundation by Raymond. We are proud of our part in its construction—a project exemplifying the versatility and scope of Raymond's abilities. Our engineers and crews are equipped to handle foundation work, large or small, in any area of the world. May we be of service?

RAYMOND
CONCRETE PILE COMPANY

A Division of Raymond International Inc.
140 CEDAR STREET, NEW YORK 6, N. Y.
Branch Offices in Principal Cities of the United States. Subsidiaries in Canada, Central and South America and other countries around the world.

FOUNDATIONS FOR THE STRUCTURES OF AMERICA . . . COMPLETE CONSTRUCTION SERVICES ABROAD

California Water Developmen

- **State will spend $85 million this fiscal year—more coming after voters pass on a $1.75-billion bond issue.**
- **Federal and municipal agencies and private firms are working on, or have finished, $1 billion worth of projects.**

The bold push for water that draws so much California enthusiasm made the state an appropriate setting for last week's annual meeting of the American Water Works Association (see p. 24). Government at all levels and private companies are creating a boom in water project construction—or, more accurately, swelling a boom already in existence (see map).

The state government moved a step closer to becoming a major water construction agency recently. The legislature appropriated $85 million for construction, right-of-way and designs of water projects for the 1959-60 fiscal year. And it agreed to a popular vote next year on a $1.75-billion bond issue for water construction.

Many agencies and firms are currently expending millions of dollars on northern California water projects. Already under way are reservoirs that will add 5 million acre-ft of storage to the existing 12.5 million acre-ft. And projected or coming up soon is at least 10,000,000 acre-ft more. Total cost of projects under way or very recently completed exceeds a billion dollars—and this does not include any state-financed work.

In addition to the state's Department of Water Resources, the following agencies have water projects actively under construction in northern California: U. S. Bureau of Reclamation, Corps of Engineers, Sacramento Municipal Utility District, East Bay Municipal Utility District, City of San Francisco, Southern California Edison Co., and Pacific Gas & Electric Co. Many of these agencies also have other projects due for construction soon.

To put the various programs in proper perspective, here is a rundown of water resource construction now under way in northern California:

• **State projects**—The California Department of Water Resources wasted no time in detailing plans for spending the $85 million. The department will open bids this summer on two Western Pacific Railroad tunnels estimated at $8.7 million and a $12-million combined highway and railroad bridge over the West Branch of the Feather River. Part of $100 million of relocation work required for Oroville Dam, these projects must be completed before construction of the dam can begin.

The state also expects to make a $7-million start on the South Bay Aqueduct, which will provide water for the Livermore Valley and eventually for the Santa Clara Valley at the southern end of San Francisco Bay. Still more construction funds are to be obligated next spring for development upstream from Oroville Dam on the Middle Fork of the Feather River.

The state also plans to spend this fiscal year: $28 million for rights-of-way for the San Joaquin Valley-Southern California Aqueduct system and the San Luis Reservoir site; $6 million for lands and easements for federal flood control works; $5 million for rights-of-way for Oroville Dam and reservoir; $1.6 million (in cooperation with the federal government) for construction of a seawater conversion plant; $3.7 million for construction of Corps of Engineers flood control projects in northern California; $1 million for rights-of-way for the North Bay Aqueduct; $4.1 million for Feather River project design work; and $430,000 for rights-of-way for the South Bay Aqueduct.

Following anticipated voter approval of the huge bond issue next year, expenditures by the state are expected to average $100 million annually for five years and $153 million annually for another five years. After that, spending will gradually decline.

• **U. S. Bureau of Reclamation**—Biggest USBR project under way in northern California is the $262-million Trinity River Projects. It is considered a part of the much larger Central Valley Project under which USBR has already built Shasta and Friant dams and many miles of conduits.

Trinity Dam, key feature of the work, is 55% complete (ENR Oct. 16, 1958, p. 30). Its 537½-ft height will make it the highest earthfill dam in the world (until Oroville Dam, 730 ft high, is built). The dam will form a 214-million-acre-ft reservoir on the Trinity River, which flows into the Pacific via the Klamath River. Much of the Trinity water will be diverted to the Sacramento Valley area through a series of tunnels. Largest of these—the 10.8 mile, 17½-ft-dia Clear Creek Tunnel—is 51% complete. Next year, contracts will be awarded for Whiskeytown Dam, Lewiston Dam, and Spring Creek Tunnel.

Yet to be decided is who will build and operate the Trinity project powerhouses. Interior Secretary Fred Seaton has recommended that the government accept an offer from PG&E for this purpose. Congress must decide this question soon if power benefits are not to be delayed.

Only other major USBR work in northern California currently under way is the $70 million Sacramento Valley Canals system. It is progressing slowly due to delays by farmers in signing repayment contracts.

USBR work before Congress includes the San Luis project and Auburn Dam. The California legislature already has approved the San Luis Reservoir for joint federal-state construction. Federal costs are estimated at $230 million and state costs at $170 million. The state would use it as a retention reservoir in connection with the San Joaquin Valley-Southern California Aqueduct system. Auburn Dam, on the American River just upstream from Folsom Dam, would cost $140 million and would store 1 million acre-ft.

• **Pacific Gas & Electric Co.**—This privately owned utility last year completed an $80-million additional development of the North Fork of the Feather River (ENR Oct. 30, 1958, p. 38). This brings its total of hydroelectric plants on this stream system alone to nine with a generating capacity of 635,800 kw. One additional plant, the 113,000 kw Beldon powerhouse, is licensed but construction is not yet scheduled. Oroville Dam will flood out PG&E's Big Bend powerhouse, the lowest downstream on the Feather River system.

PG&E last month completed another $80 million development—the Kings River Project. It included two new reservoirs formed by high, concrete-

Booms

faced rockfill dams—Courtright and Wishon (ENR Aug. 29, 1957, p. 38). It also includes the biggest underground powerhouse in the U.S. (ENR Sept. 19, 1957, p. 51). The utility will start work late this year on the Kings River powerhouse.

PG&E also has applications before the Federal Power Commission for additional hydro construction on the Pit and McCloud rivers upstream from Shasta Dam. California-Oregon Power Co. also has a McCloud River project in mind. The FPC will have to decide which should be licensed.

By buying by-product power, PG&E is also making it possible for several local agencies to construct works for other purposes. A recent example is the Tri-Dam project on the Stanislaus River system, completed last year by the Oakdale and South San Joaquin Irrigation Districts.

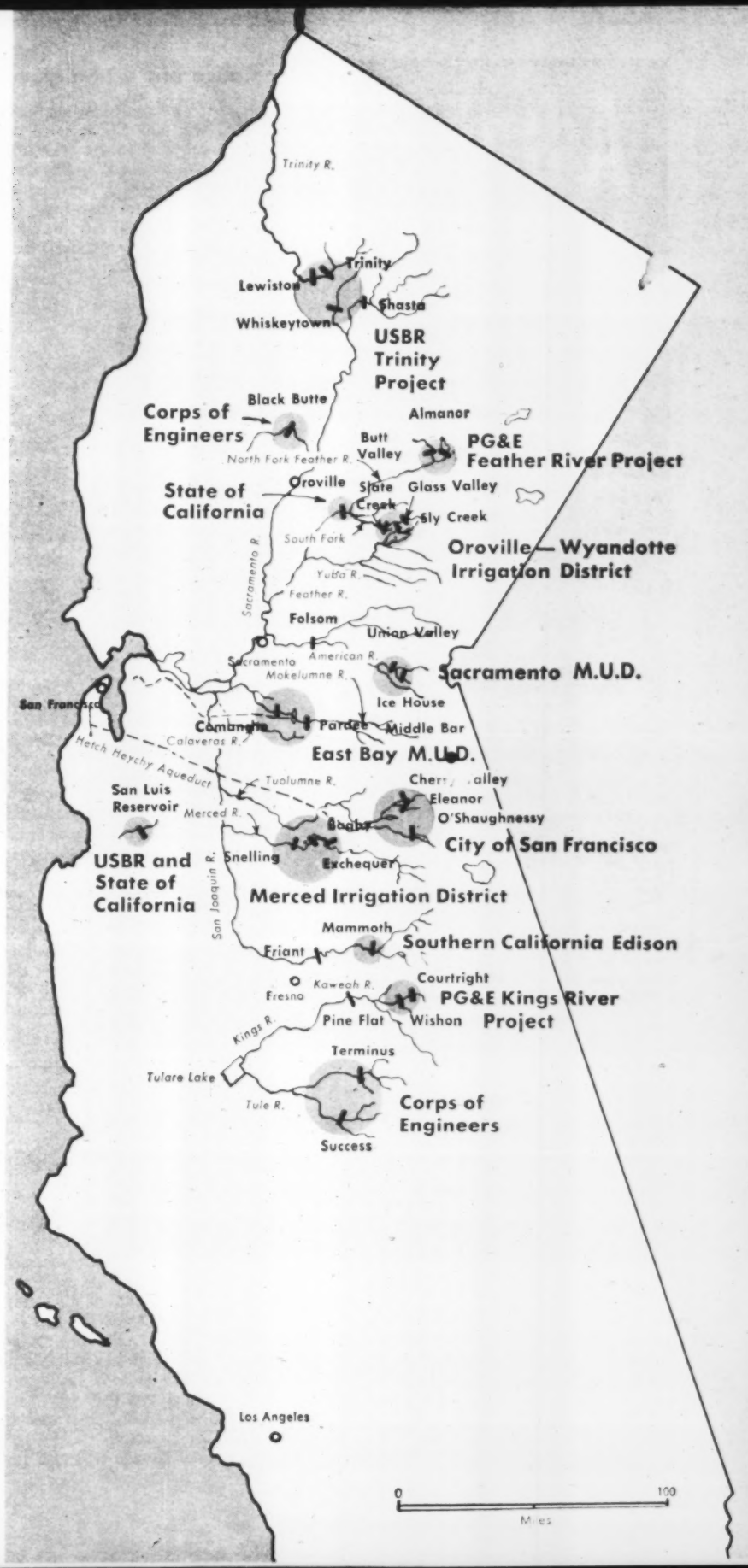
• **Sacramento MUD**—SMUD is speeding its construction program on the American River above Folsom Dam. Additional storage and generating capacity will bring the total to 385,000 acre-ft and 487,000 kw. Cost will rise from $85 million to $166 million. SMUD is in the power service business only, but water stored will be available for downstream conservation uses.

Features now under construction includes the $2-million Ice House Dam, about 50% complete, and the 21,000 ft long, 14-ft-dia Jaybird Tunnel, 40% complete.

SMUD has just awarded a $13-million contract for Union Valley Dam, a 430-ft-high earthfill structure. Other phases of the SMUD program under contract total more than $8 million.

• **East Bay MUD**—EBMUD, which supplies fresh water from the Mokelumne River in the Sierra Nevada to 13 cities and large unincorporated areas on the east side of San Francisco Bay, has recently started a $283-million, 10-year expansion program. Construction will be financed by a $252-million bond issue passed in 1958 and $31 million in operating revenues.

Major unit in the construction program is a $68.2 million third aqueduct from existing Pardee Dam in the Sierra Nevada to the East Bay. This new Mokelumne Aqueduct will parallel two

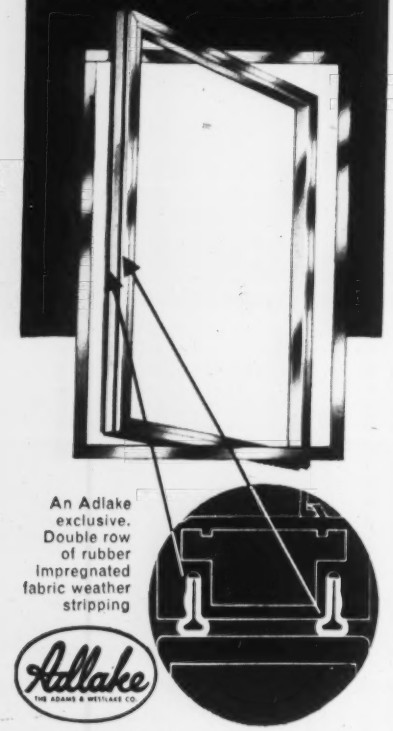


Major California water projects are shown in the map. Project areas are circled, with names of the dams in black. Sponsoring organizations are in larger type.

Adlake

reversible windows

WON'T LEAK!



An Adlake exclusive. Double row of rubber impregnated fabric weather stripping

Adlake—and only Adlake—is double sealed with a resilient, rubber impregnated fabric weather strip, permanently positioned in an aluminum binder. This seal has proved *impervious to the elements* in rigorous laboratory tests and in long years of service.

Cold and inclement weather will not affect this weather stripping. In all climates it keeps heated and conditioned air *IN*, water and outside air *OUT*.

That is one reason why there are nearly as many Adlake reversible aluminum windows in service as all other makes combined. Other reasons are: Adlake windows operate at a finger touch. They will never rot, rust, rattle, stick or screech. They will never need paint. Adlake guarantees satisfaction. When you install Adlake you know you are getting the best.

Let us send you the details about Adlake windows. Just write The Adams & Westlake Company, 1184 N. Michigan, Elkhart, Indiana.

THE

Adams & Westlake

COMPANY

New York...ELKHART, INDIANA...Chicago

. . . California water development

existing lines (65 in. and 67 in. dia) and by late 1962 will add 171 mgd to capacity for a total of 325 mgd. The line will consist of 80 miles of 87-in.-dia steel pipeline and 14 miles of tunnels. A $15-million contract for the first 33-mile section was awarded late in June.

EBMUD plans to build two new dams on the Mokelumne at a combined cost of $42.3 million. Middle Bar Dam, a concrete-arch dam and powerhouse, probably will be started next year above Pardee reservoir. Camanche Dam, an earthfill structure downstream from Pardee, will be built later.

• **City of San Francisco**—San Francisco is adding more generating facilities to its Hetch Hetchy water and power system under terms of a $54-million bond issue passed in 1955. First phase of this Canyon-Cherry power development is under way, and will be completed in 1960.

San Francisco water storage on the Tuolumne River in Yosemite and Stanislaus National parks has recently been augmented by 268,200 acre-ft in Lake Lloyd, formed by the recently completed Cherry Dam. Now under construction is Cherry powerhouse, a $5.2-million project. It will utilize water stored behind Cherry Valley Dam to add peak capacity of 131,500 kw to the present 82,000-kw capacity of San Francisco's power plant in Moccasin. The 5½-mi. Cherry power tunnel, an $8.1-million project, is 83% completed. The project also included a 1¼-mile bore to connect Lake Eleanor to Lake Lloyd. The entire Cherry project is expected to be on the line by October, 1960.

Preliminary studies and engineering are under way on the second plant, the Canyon power plant project. It will utilize 11 miles of new pressure tunnel from O'Shaughnessy Dam to Early Intake Diversion Dam where a 1,370-ft drop to a powerhouse will develop an average output of about 61,000 kw. Actual construction is to start after completion of the Cherry project. The Cherry and Canyon projects will increase capacity of the system to 274,500 kw.

• **Southern California Edison Co.**—SoCal Edison has a $49.6-million project under way on the upper reaches of the San Joaquin River. The project is part of Edison's $200-million Big Creek development, which has been under development for 47 years. The new works includes the 450-ft-high earthfill Mammoth Dam and an 8-mile, 20-ft-dia tunnel, holed through in June. At full reservoir the new power installation will have 150,000 kw capacity.

The additional storage will also improve downstream generating capacity owned by the Edison Co.

• **Corps of Engineers**—Two earthfill flood control dams are under construction near the south end of the San Joaquin Valley by the Corps of Engineers. These are $14.2-million, 142-ft-high Success Dam on the Tule River, and the $23.5-million, 250-ft-high Terminus Dam on the Kaweah River.

The Corps will call for bids early next year for the $18-million Black Butte Dam on Stoney Creek on the west side of the Sacramento River Basin.

The Corps is also preparing to begin work on New Hogan Dam—a $17.6-million rockfill structure on the Calveras River near Stockton—when Congress comes through with construction funds.

• **Oroville-Wyandotte Irrigation District**—Of the many northern California water conservation projects not yet under construction, perhaps the nearest to the construction stage is OWID's project on the South Fork of the Feather River above the state's Oroville Dam. Bids were opened on this project in May, but no bids were received on four of the nine schedules.

This resulted in postponement of bond-issue bidding, but project officials look on the setback as temporary. All concerned have said the engineering and financing are sound.

The dearth of bids was blamed partly on high interest rates, partly on the unwillingness of contractors to "bid into the teeth of a steel strike."

The $58-million project included three dams—Sly Creek, Grass Valley and Slate Creek; six tunnels ranging from 9 to 12 ft dia and totaling nearly 17 miles in length; and three power houses with about 100,000 kva installed capacity.

• **Merced Irrigation District**—Plans by the MID for further development of the Merced River are typical of many upcoming projects. Estimated at $82.5 million, the development would include two new dams, Bagby and Snelling, and a revision of existing Exchequer Dam to increase storage from 281,000 acre-ft to 1,000,000 acre-ft. Water-rights difficulties and high interest rates have delayed the start until 1961, at best.

Among other groups considering developments: The Yuba County Water Agency, Yuba River near Marysville; Placer County Water Agency, Middle Fork of the American River; Glenn-Colusa Irrigation District, the 1 million acre-ft Iron Canyon Dam on the Sacramento River between Redding and Red Bluff; and Turlock and Modesto Irrigation Districts together with the City of San Francisco, a rebuilding of Don Pedro Dam on the Tuolumne River.

Bethlehem Form Stakes
Easy to drive for fast anchoring

The strong projectile point on Bethlehem Form Stakes quickly penetrates even the hardest road base . . . speeds the anchoring of steel forms for highway work.

HIGH-STRENGTH STEEL

Bethlehem Form Stakes are made of high-carbon, high-strength steel. They can be driven with a sledge or with power tools. You can really treat them rough, for they have the toughness to withstand repeated battering. They are economical, too, because these rugged stakes can be pulled out and re-used, time after time.

BUNDLED FOR EASY HANDLING

The stakes are made in any diameter and can be furnished in various lengths. They come well strapped in one-man bundles which are easy to handle and store.

OTHER STYLES AVAILABLE

In addition to the plain-end stake which is commonly used, Bethlehem Form Stakes can also be supplied with chamfered ends and with upset ends, to meet special needs. Tell us about your requirements. Get in touch with the Bethlehem sales office nearest you. Or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Phoenix Towers apartment demonstrates **Three**

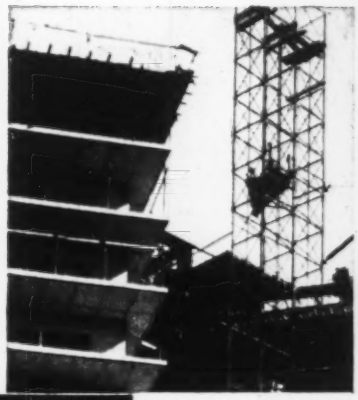
# of fir plywood

PHOENIX TOWERS
LOCATION: Phoenix, Arizona
ARCHITECT: Ralph C. Harris, Chicago
CONTRACTOR:
Del E. Webb Construction Co.
Phoenix, Arizona

key advantages concrete form panels

—time and labor savings
—economy through re-use
—smooth concrete surfaces

Confirmed again on this 14-story cooperative apartment—the fact that fir plywood concrete forms offer advantages unmatched by any other material. In building Phoenix Towers, Del E. Webb Construction Co. used over 25,000 square feet of PlyForm and Overlaid fir plywood. F. L. McDowell, job superintendent, reports that form fabrication, stripping, and moving was fast and easy. Rubbing and finishing time was cut to a minimum due to the smooth architectural surfaces made possible by plywood. Phoenix Towers offers 60 luxury apartments in four wings, each planned to provide a maximum view of surrounding mountains and desert.



One floor was poured every two weeks, with plywood forms numbered and moved upward for each succeeding pour. Plywood was also used to form 120-car underground garage (left). Virtually no finishing was required before walls and ceilings were painted.

DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON

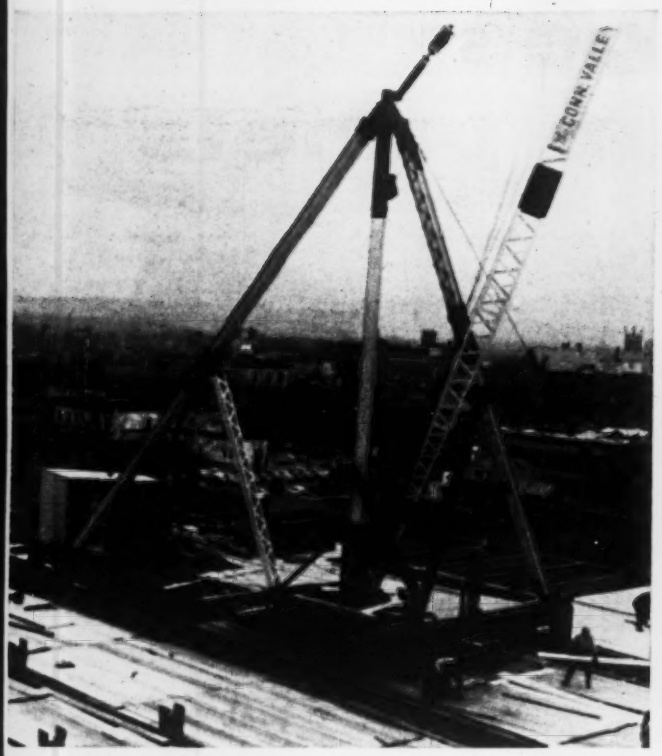
—a non-profit industry organization devoted to research, promotion and quality control

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD. Grades manufactured expressly for concrete form work include:

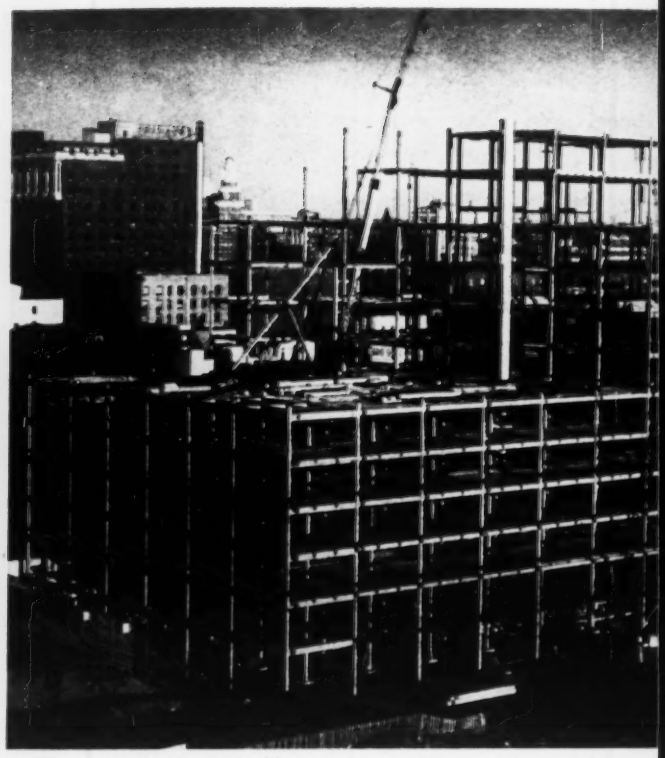
INTERIOR PLYFORM®—standard concrete form grade plywood made with water-resistant glue. Gives multiple (up to 10-12) re-uses.

EXTERIOR PLYFORM®—standard concrete form grade plywood made with waterproof glue to give as many as 25 or more re-uses.

OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete, up to 200 re-uses.



As derrick rolls along sixth-floor steel . . .



Ground crane feeds it framing members, and erects some

Traveling Derrick Teams Up With

A small erection crew did a faster-than-usual erection job on the steel frame of a new office building for Southern New England Telephone Co. in New Haven, Conn. The crew sped the work with cranes operating on the ground to place the steel for the lower portion of the frame, and a stiffleg derrick converted to a traveler for the upper portion.

While the erection method steals the limelight, construction of this building involves several other noteworthy features:

- The frame is founded on annular footings.
- The exterior curtain wall consists of sandwich panels faced with porcelain-enameled steel and set in stainless steel frames.
- The mullions serve as tracks for mechanically operated scaffolds for window washers.
- The building will be heated and cooled by a perimeter system of air induction units.
- Fuel oil will be preheated by electrically heating the oil pipe.
- Fluorescent lighting will operate on 277 v.

The $12 million office building is being constructed on a five-acre site occupying a city block between a main city street and a new highway link to the Connecticut Turnpike. The structure is 312x144 ft in plan. It's nine stories, plus a basement and two penthouses and provides 560,000 sq ft of floor area, 7.6 million cu ft of space.

Stairways, elevators, toilet rooms, house services and shafts for vertical distribution of electrical and mechanical systems are grouped in a 192x36-ft central service core. The roof is designed for use as a heliport in the future.

The unusual foundation for the central core takes the form of a dish sloping downward from the perimeter toward the interior. It reaches its greatest depth below the elevator pits.

Continuous footings that form concentric rings around the core foundation carry the building's steel frame. This design provides the bearing area needed for the soil condition encountered.

• Novel steel handling—The steel frame has columns spaced 24 ft c-c in both directions. For the most part, connections were made with high-tensile-strength bolts.

The 4,500 tons of steel for the frame was delivered at a railroad yard some distance from the site. Carefully sorted at the receiving point, the steel was transported through the city to the job by three straddle-type lumber carriers. These moved about 12 tons per trip.

This equipment eliminated the need for handling steel on and off flatbed trailers and allowed the erector considerable maneuverability.

• Traveling derrick—Before the method of frame erection was selected, several schemes were considered, taking into account available personnel and requirements for erection crews, operating engineers, type of equipment and other factors. Included were:

Scheme 1—Use cranes to erect the first four tiers, finish up with three guy derricks and a large crawler crane. **Objections:** Too many erection crews and operating engineers needed; equipment not on hand.

Scheme 2—Erect steel to the fourth or sixth floor with cranes, finish with a truck crane operating on that floor. **Objections:** Impractical because of the building shape and size of pieces to be handled.

By **Matthew L. Blakely**, *executive vice president, Edwin Moss & Son, Inc, Bridgeport, Conn. Mr. Blakely's firm was general contractor for this office building.*

itself for . . .

Office building in New Haven, Conn., enclosed with steel sandwich panels

Truck Cranes for Fast Steel Job

Scheme 3—Erect six tiers with cranes operating on the ground, finish with a stiffleg derrick converted to a traveler working from the sixth-floor level.

The last scheme was adopted. It offered both the desired capacity and flexibility to do the job. It also kept the key work force to a minimum.

A 35-ton truck crane and a 60-ton crawler crane operating on the ground placed the steel for the first six tiers in a little more than four weeks. When the erection crew that had been working with the 35-ton crane was finished with its lower-story work, the men were shifted to the traveler.

This equipment basically was a 30-ton stiffleg derrick. Along with a three-drum hoist, it was mounted on a 50x28-ft frame made of 20-in. I-beams. It rode on tandem trucks set under the double sill at the mast and hoist and three single trucks under the light side. It was equipped with a 90-ft boom with a 30-ft, 7-ton jib.

The traveler was set on rails bolted to beams attached to the column heads. Its mast was placed on the longitudinal center line of the building and was fed steel from one side.

Though the derrick could pick up steel from the street, the erector speeded up erection of the upper tiers by using the 60-ton crane with a 140-ft boom to feed it. (That crane also moved scaffold plank up from the lower tiers and erected a three-story service wing at the rear of the office building.)

When the derrick completed setting two bays of steel from the sixth floor to roof level, it was pulled back two bays to the next position, and the rails in those bays were removed. It then proceeded to erect the next two bays.

The first move took a slow, cautious 90 minutes. As the crew gained confidence and experience with the rig, the moves were speeded up, finally averaging 30 minutes. Best time was 20 minutes.

To erect the last of the steel from the sixth floor, the erector projected the hoist end of the traveler frame 20 ft beyond the end of the building frame. The hoist side was supported on a knee brace, which was also gived to the building frame to resist uplift. Support was not needed for the full distance out under the light side of the frame.

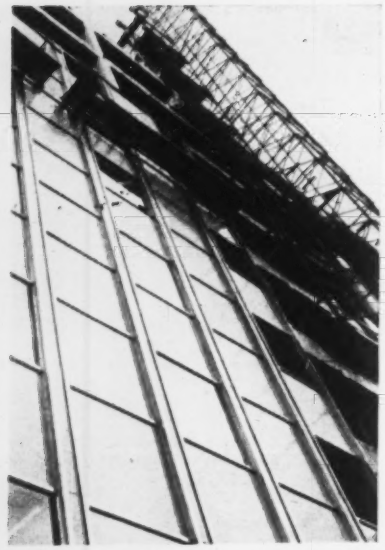
On the average, the traveler erected about 100 pieces daily, a performance that compares favorably with crane work.

When the derrick had set all the steel it could reach, the erector used the 60-ton crane to dismantle it. For that purpose, and to erect the last few members of the steel frame, the crawler crane was equipped with a 150-ft boom and 20-ft jib.

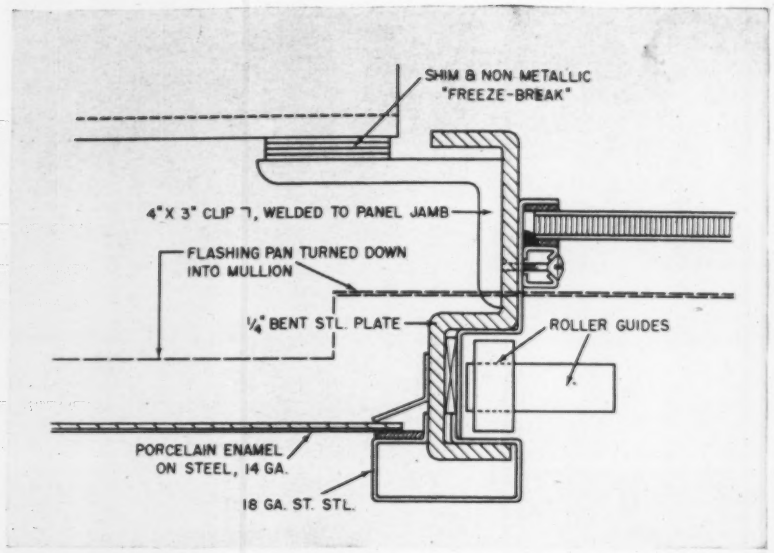
• **No shores**—While the steelwork was progressing, the first floor, which is reinforced concrete, was completed. The formwork was supported on steel-girder falsework, eliminating the need for shores to the ground floor. As a result, movement on the lower level was unhampered by obstructions and space was freed for installation of underground utilities and other services. In addition, there was no need for concern over freezing of ground under mud sills.

Cellular steel deck with concrete topping was used for all floors except the first and penthouse floors and the main roof. Installation of the deck followed closely behind the framing.

• **Fast concreting**—Steel erection was completed in midwinter. Little concrete was placed before spring, because of the nature of concreting operations—substantially perimeter beam and column fireproofing and core area floors and beams. But once the weather broke, the general contractor employed more



FACADE consists of porcelain-enameled panels alternating with windows.


SHIM & NON METALLIC "FREEZE-BREAK"
4"X 3" CLIP ⊓, WELDED TO PANEL JAMB
FLASHING PAN TURNED DOWN INTO MULLION
¼" BENT STL. PLATE
ROLLER GUIDES
PORCELAIN ENAMEL ON STEEL, 14 GA.
18 GA. ST. STL.

HORIZONTAL SECTION through wall shows how stainless steel mullion will be used as a vertical track for window-washer's platform.

than 60 carpenters on formwork and 60 laborers on concreting operations for a period of about 14 weeks. Formwork, reinforcing and concrete were handled by crane.

Over 250,000 sq ft of formwork were used and 7,000 cu yd of small-volume concreting were done in this time. Operations moved at such a pace that the stripped concrete seemed literally to grow up the faces of the building daily.

The reason for the big push was to get the concrete work finished by the time work on the exterior walls was scheduled to begin. The schedule called for walls to be completed in late autumn, when temporary heat could be supplied from permanent boilers.

• **Sandwich panels**—The building exterior is a combination of granite, limestone, metal panels and glass. Granite is used at three main entrances. Limestone, backed with brick, rises from ground to roof at the four corners of the structure. The metal panels form the remainder of the exterior, with glass windows between them.

The panels, about 5x6 ft by ½ in. thick, are set in stainless-steel frames. Consisting of a 2 in.-thick aluminum honeycomb sandwiched between two sheets of 16-ga steel, the panels have an outer face coated with turquoise porcelain enamel.

An insulation and vapor-barrier system was erected inside the wall panels. Inside that is lath and plaster finish and perimeter heating and cooling system enclosures.

The story-high stainless-steel panel frames were placed about 12 in. apart. A porcelain-enameled panel in a darker color than the other panels was slid between them to fill the gap. The stainless steel is 18 ga, type 302, with dull finish.

• **Making window washing easy**—The mullions, which are the vertical members of these frames, serve an important role also in facilitating window washing.

They will function as tracks for the working platform of a traveling window-washing unit, which will ride on rails on the main roof. This unit is equipped with a suspended scaffold that will carry the window washers up and down the facade. Rollers on the scaffold will be guided in a channel rolled into each mullion.

Where the wall frames are butted, the joints are backed up with steel shoes inside the mullions for alignment and support.

• **Heating-cooling by induction**—The building will be heated and cooled primarily with a perimeter system of air induction units. These will be located under each window.

Some heating will be accomplished with a fan system, and in some spaces, hot-water convectors, fin-tube radiation and unit heaters will be used.

The coils in the heating-cooling induction units will be supplied chilled water from a central refrigeration plant and hot water from steam heat exchangers. Each unit has a nozzle that introduces primary air to the rooms at a high-enough velocity to induce secondary air circulation across the coil.

The primary air is conditioned in a central plant in the penthouse. The plant is equipped with three centrifugal compressors with a capacity of 1,815 tons.

• **Oil electrically preheated**—Steam for heating and other purposes is generated in the ground-floor boiler room by three boilers. Each has a capacity of 15,300 lb of steam per hour when fired with 127 gph of No. 6 fuel oil.

The oil is preheated by sending an electric current through the oil pipe.

• **High-voltage service**—An electric utility will provide normal and emergency electric feeders to supply 13,800-v service to three banks of transformers. Each bank contains three 500-kva single-phase transformers. These banks, in turn, will supply 480/277-v, three-phase, four-wire service to the main switchgear. Dry-type transformers will meet the need for 120/208 Y power requirements.

In general, motors will be 480-v, three phase. The largest are the three 600-hp motors required to operate the air-conditioning equipment.

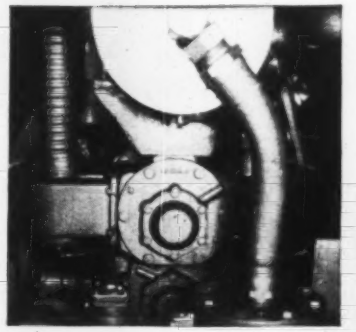
About 10,000 fluorescent lighting fixtures will be used to illuminate the building. These will operate at 277 v.

The cells in the metal floors will be used for underflow distribution of electrical and communication systems.

The building was designed by the Office of Douglas Orr, architect, New Haven, Conn. Henry A. Pfisterer, also of New Haven, was the structural engineer, and Meyer, Strong & Jones of New York City, were the mechanical and electrical engineers.

Edwin Moss & Son, Inc., Bridgeport, Conn., is the general contractor. Structural steel was furnished by Bethlehem Fabricators, Inc., Bethlehem, Pa., through Topper & Griggs, Inc., West Hartford, Conn., and erected by Connecticut Valley Contracting Co., Middleton, Conn.

Can your present portable pass this vital double-value check?



Gardner-Denver rotaries require no major dismantling job for inspection of working parts. Only a few minutes are required to remove the 12 cap screws to expose all the rotor blades for routine inspection or replacement that assures trouble-free operation.

The Gardner-Denver RP125 is built with extra tool storage space. Big, weather-tight toolbox provides safe storage for tools, steel and hose.

THERE'S NO SUBSTITUTE FOR MEN

In construction—on jobs large or small—the Gardner-Denver specialist is trained to assist in solving your air equipment problems. He can help you minimize down time and lost production. At Gardner-Denver *there's no substitute for men*—our 100-year philosophy of growth.

✓ Does your present portable air compressor have parts within easy reach for quick inspection and maintenance on the job? *Gardner-Denver portables do.* (See photo above.)

✓ Does your present portable offer top fuel economy? *Gardner-Denver portables do.* Exclusive "THRIFTMETER"® control matches air output to demand—saves fuel, saves wear and tear on engine and compressor.

These values are important on any job where air power helps keep work moving. That's why Gardner-Denver builds these features into *all* rotary portables—large and small alike.

Furthermore, Gardner-Denver RP125 and larger compressors have a clutch and water-oil cooling system for easy, all-weather starting. Engine water warms up compressor oil before clutch is engaged.

If your present portable doesn't measure up to all these cost-cutting values, take a look at Gardner-Denver. Get all the details from your Gardner-Denver distributor.

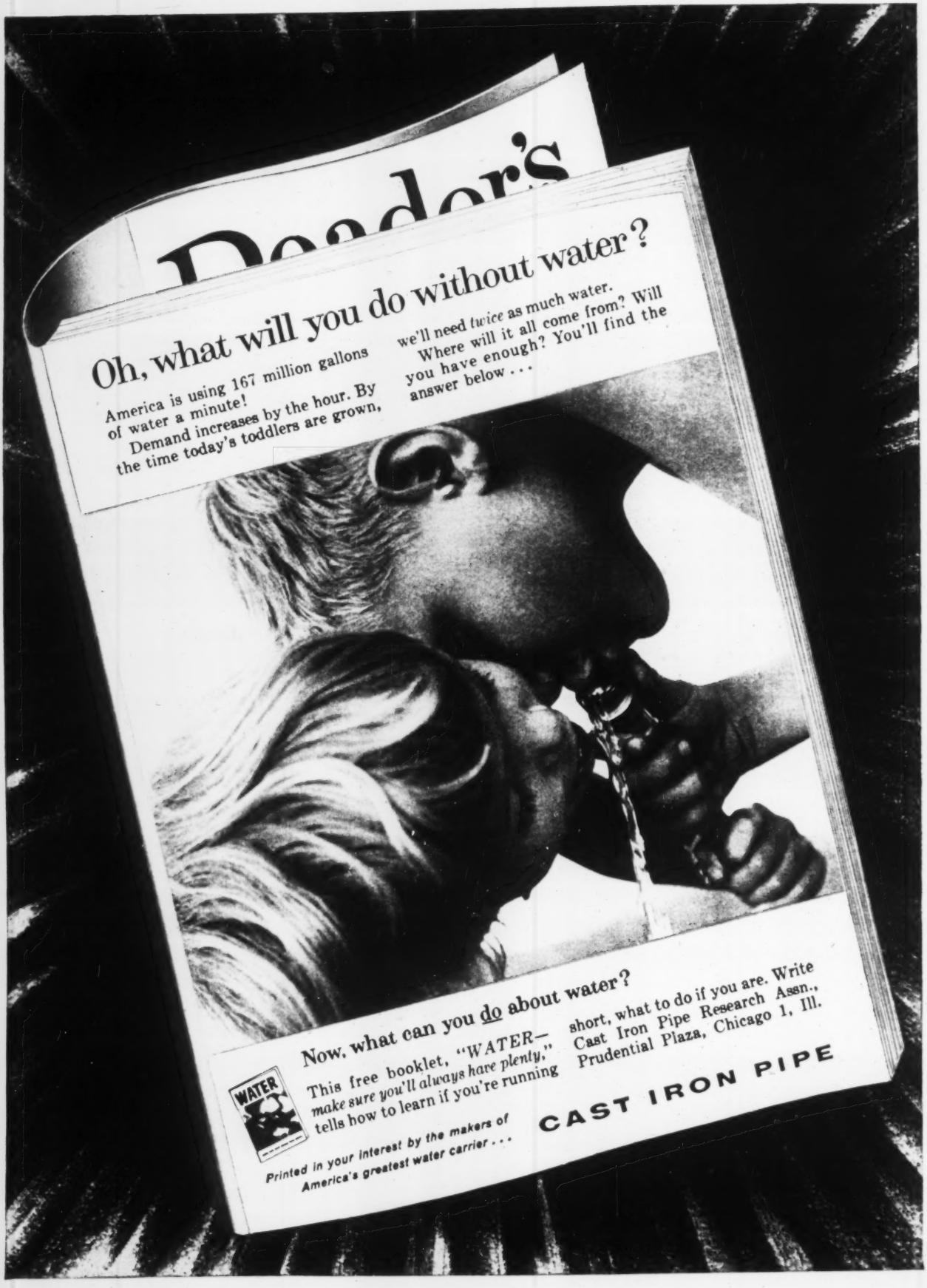
GARDNER-DENVER Since 1859 — 100 1959 YEARS

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario


Reader's
Oh, what will you do without water?
America is using 167 million gallons of water a minute!
Demand increases by the hour. By the time today's toddlers are grown, we'll need *twice* as much water.
Where will it all come from? Will you have enough? You'll find the answer below . . .
Now, what can you do about water?
This free booklet, "WATER—make sure you'll always have plenty," tells how to learn if you're running short, what to do if you are. Write Cast Iron Pipe Research Assn., Prudential Plaza, Chicago 1, Ill.
WATER
Printed in your interest by the makers of America's greatest water carrier . . .
CAST IRON PIPE

New Ad Campaign in Reader's Digest Dramatizes America's Water Problem

Cast Iron Pipe Research Association promotes better understanding of water supply and distribution problems

Offers Informative Booklet for Step-by-Step Action at the Local Level

Here's help for consulting engineers and everyone else directly concerned with the supply, treatment and distribution of water—help that will acquaint the general public and community leaders with the vital importance of this growing problem.

On the opposite page you see the first in a series of advertisements, this one appearing in February *Reader's Digest*. Placed by the Cast Iron Pipe Research Association, these striking advertisements point out to Mr. and Mrs. America how much we depend on a good water system and why we can no longer take it for granted.

Similar advertising will appear regularly this year in *U. S. News & World Report*, *Nation's Business*, *Better Homes & Gardens*, *American Home* and *Sunset* magazines to carry this public service message to millions of community leaders and homeowners.

Free Local Plan-of-Action Booklet

These ads offer a free booklet telling about the water problem. It shows how responsible citizens can acquaint themselves with the needs of their community. It also gives a step-by-step outline of action, telling how they can help their officials extend and improve the local water system through more adequate rate structures or financing.

We'll be happy to send you a free copy of this new booklet. Write to Thos. F. Wolfe, Managing Director, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

THREE REASONS WHY CAST IRON PIPE IS *AMERICA'S GREATEST WATER CARRIER:*

1. More miles of underground cast iron water mains are now in use than of all other kinds of pipe combined.

2. More miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.

3. Impartial surveys prove that today's water utility officials and consulting engineers prefer cast iron pipe for underground water distribution by an overwhelming majority.

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

Men set forms and reinforcing steel for lift of concrete.

Here slab has been placed and

At Oahe: Contractor Licks Shale by

The contractor is reversing normal construction methods to build the substructure of the Oahe Dam powerhouse in a tricky shale formation. The dam is being built across the Missouri River near Pierre, S. D.

The shale underlying the area is like rubber under compression. When overburden is stripped off, the release of the weight causes the shale to bounce upwards as much as two feet. This movement is complicated by the fault planes and fractures that riddle the shale.

The result is an extreme instability when the shale is exposed by excavation. Almost anything—an unbalancing of the delicately poised shale blocks by the excavation, external moisture seeping into the fractures to act as a lubricant, or an exposure causing drying and shrinkage—can set off a slide.

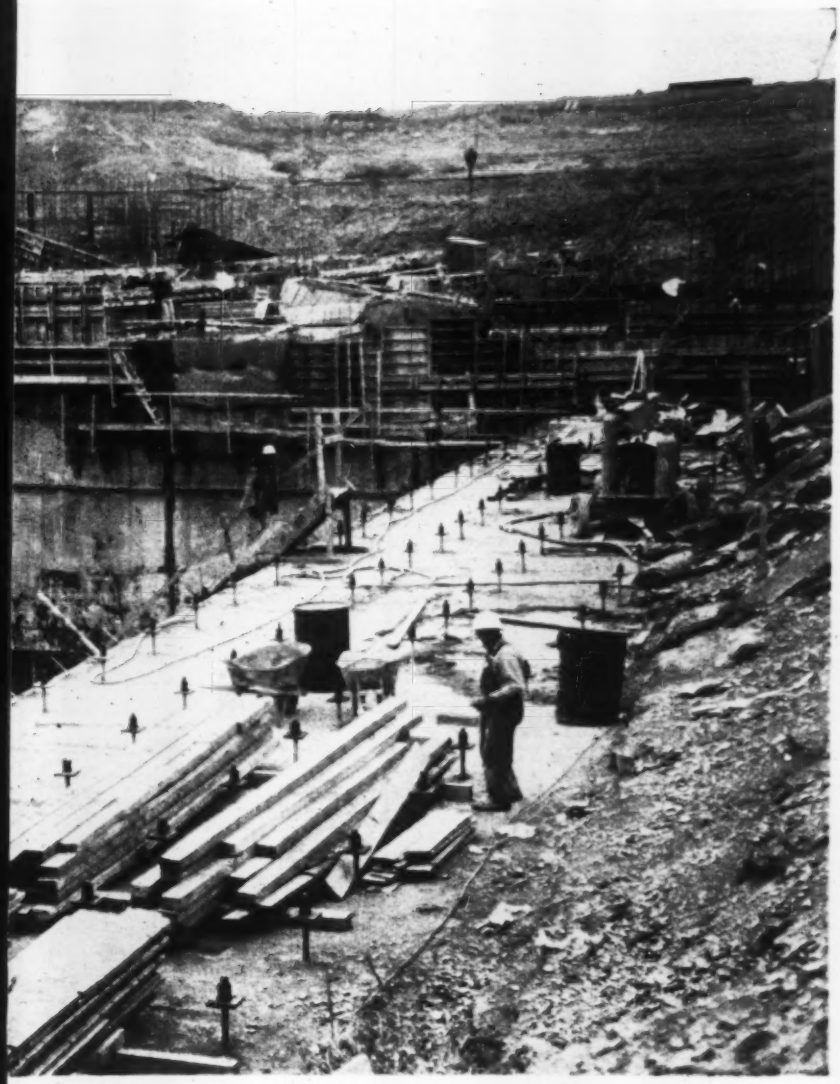
The technique used in carrying out the job is all backwards. Rock bolts, normally placed overhead to keep rock from dropping, are placed underfoot to keep the shale from rising. Concrete, which normally starts at the bottom and works up, here starts at the top and moves downward. Concreting, which of necessity usually follows excavation, takes place ahead of much of the earth removal.

Objective of the procedure is to open up the excavation, nail it down, seal it off against moisture or drying and get it weighted down quickly with massive concrete, before trouble can result.

Digging areas is limited. The excavation consists essentially of a trench 126 x 530 ft with surfaces in five planes

---

By Ralph Smith, *who knows more about the Missouri River than the Corps of Engineers does, according to one Corps official. As a reporter for ENR and the OMAHA WORLD HERALD, Ralph has covered developments on all the Missouri River dams. His articles on the river have appeared in the SATURDAY EVENING POST, PARADE and LIFE.*



anchor bars set for a portion of new bay.

Building Backwards

varying from horizontal to 45 degrees. In this trench go the foundations and the draft tubes for the seven 80,000-kilowatt generators at the dam.

The access to the foundation is further limited by the threat of the shale. To minimize the possibility of a rebound, the specifications permit only a small area to be unloaded at any one time. Excavation is limited to three generator bays, only two of which can be adjacent at any one simultaneous period. The effect of this is to require shale removal to be carried down 37 ft in an opening only 126 x 76 ft.

Complicating this are further restrictions that make the job a tough one to schedule and carry out. The fragile shale must be sealed off from exposure to the air within two hours after it is uncovered, and guarded with a 4-in. layer of concrete within 48 hours. Anchor bars, 20 ft long, have to be set on 5-ft centers perpendicular to the varying slopes. To keep the shale weighted down, 45% of the massive concrete has to be placed in a generator bay before excavation can begin on an adjacent bay.

Because of these restrictions, shallow lifts are required. The excavation is in a series of 6- or 7-ft lifts. The lift limitation has two purposes: It prevents exposing more shale than can be handled in the permissive two hour period; and it provides a series of platforms for the drill rig in setting holes for anchor bars.

The rough excavation is with a 2½ cu yd shovel, with the final foot of finish grading carried out by a 1½ cu yd backhoe. On two bay increments, trucks go into the excavation; on single bay portions, there is room only for the backhoe in the final phases, and it does the finish grading as it backs out.

As soon as the shale is out to final grade it is coated with a bituminous sealing solution to keep out air and moisture. Within 24 hours—although job specifications permit up to 48 hours—the exposed portion is covered with a 4-in. slab of concrete, crane-placed from a 2-cu yd bucket.

With the shale protected, the drill rig moves in to sink the holes through the concrete, drilling two at each setting of the rig. Bars are 1⅜ in. diameter and are set in grout in the 6-in. drill holes, which are belled to 18 in. at the bottom end. Horizontal surfaces are drilled with a conventional rig.

The side slopes gave the contractor trouble at first. Conventional rigs, which have tilting drills on a fixed vertical mast, could not handle the various angles. The difficulty was solved by employing the rig built to set anchor bars for the thin-section training walls of Fort Randall Dam, 200 miles downstream. It has a fixed drill mounted on a tilting mast and hence could handle all holes at all angles.

Completion of the excavation and its protection is followed by the setting of the forms for the draft shoes, which are fabricated elsewhere on the job, and the placement of concrete. As soon as the requisite 45% placement mark is passed, excavation starts on an adjacent bay.

The $4.2-million job is one of two major projects being carried out at Oahe Dam by a combine of Winston Bros. Co. and Johnson, Drake and Piper, Inc., both of Minneapolis, Minn., and Green Construction Co., Des Moines, Iowa. The same group, plus American Pipe and Construction Co., Los Angeles, and Foley Brothers, Inc., St. Paul, Minn., hold a $25-million contract to construct the downstream power tunnels of the dam.

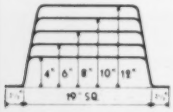
E. G. Libert is project manager of both the powerhouse substructure and the downstream power tunnel. T. A. Leines is assistant project manager on the substructure and J. L. Feller is assistant project manager for the tunnel. Project engineer for both jobs is Walter Heistand.

Oahe, the world's largest rolled earth dam, is being constructed by the Corps of Engineers. The dam is under the supervision of the Omaha District office of the Corps, headed by district chief Col. David G. Hammond.

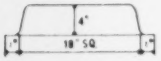
In modern horizontal buildings, too

GRID SYSTEM CONSTRUCTION OFFERS EXTRA ADVANTAGES!

With economical, adaptable GRID SYSTEM construction, many things are possible! GRID SYSTEM two-way ribbed concrete slabs carry maximum loads — allow for the addition of extra floors, penthouse additions, roof parking or storage, etc. Interchangeable steel GRID domes offer wide, open spans and great flexibility in utility layout. GRID SYSTEM ribbed ceilings create an interesting decorative effect, provide good acoustical properties. Air diffusers, lights, acoustic tile or utilities install easily in the recessed areas. Now in use in thousands of buildings from coast to coast*, versatile GRID SYSTEM cuts building time and costs to a minimum.



OVERALL PLAN SIZE — 24" x 24"



OVERALL PLAN SIZE — 22" x 22"

Interchangeable GRID domes are delivered to the job site in quantities large enough for any project. No charge is made for normal wear and tear, including necessary screw holes for sleeves, inserts, etc. All GRID domes have the same slope, for uniform appearance.

*Among the many buildings utilizing GRID SYSTEM construction are: Lexington Junior High School, Lexington, Mass.; Administration Building, Library Building and Classroom Building, Furman University, Greenville, S.C.; Pan American Airways Hangar 214, Idlewild Airport, N.Y.; Off-Street Parking Garage, Post Office Sq., Boston, Mass.; Prudential North Central Home Office Building, Minneapolis, Minn.

GRID SYSTEM T.M.

GRID FLAT SLAB CORPORATION
Boston 25, Massachusetts

GRID SYSTEM Grid Flat Slab Corporation
761 Dudley Street
Boston 25, Mass. EN 5

Gentlemen:

☐ Please send me your catalog, with full information on GRID SYSTEM construction.

☐ Please add me to your mailing list to receive GRID-GRAM NEWS.

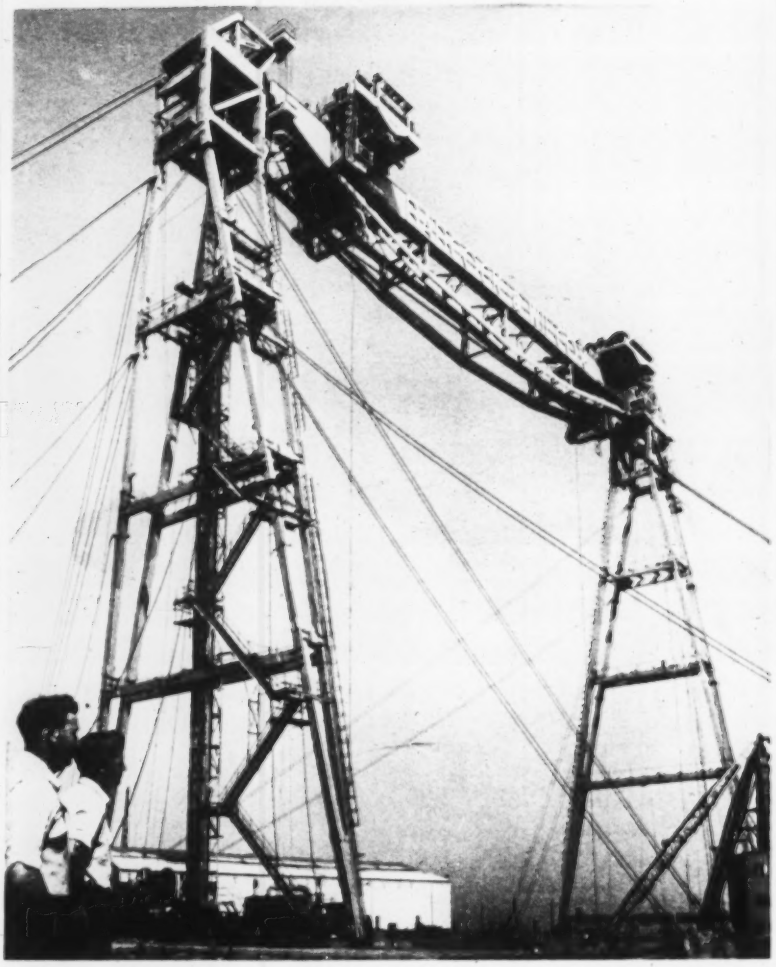
Name _____

Company _____

Address _____

City _____ State _____

International



Atomic Plant Crane Erects Itself

At Hinkley Point, Somerset, England, engineers watched this crane hoist its own 250-ft-long bridge section into place.

The 650-ton machine will roll back and forth on rails with equipment weighing up to 400 tons for two 250-megawatt atomic-energy power plants now under construction. Rising to a height of 235 ft above ground, the bridge crane will straddle the 180-ft-high reactor buildings.

Babcock & Wilcox designed and built the crane. The company is participating with English Electric and Taylor Woodrow in construction.

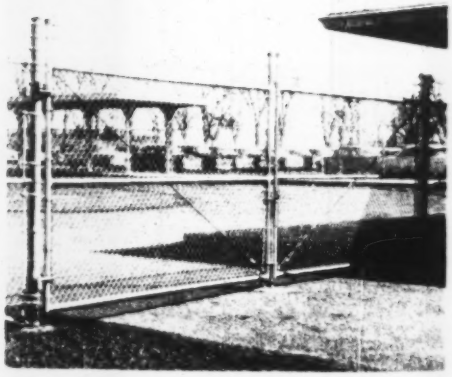
Hitch in India Steel Mill Job

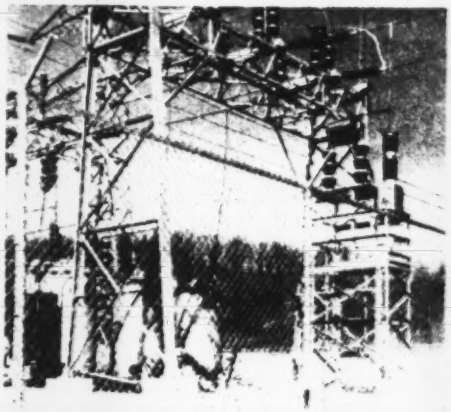
The construction of a much-needed alloy steel plant in India is being held up while the government of India tries to have its chapati and eat it too.

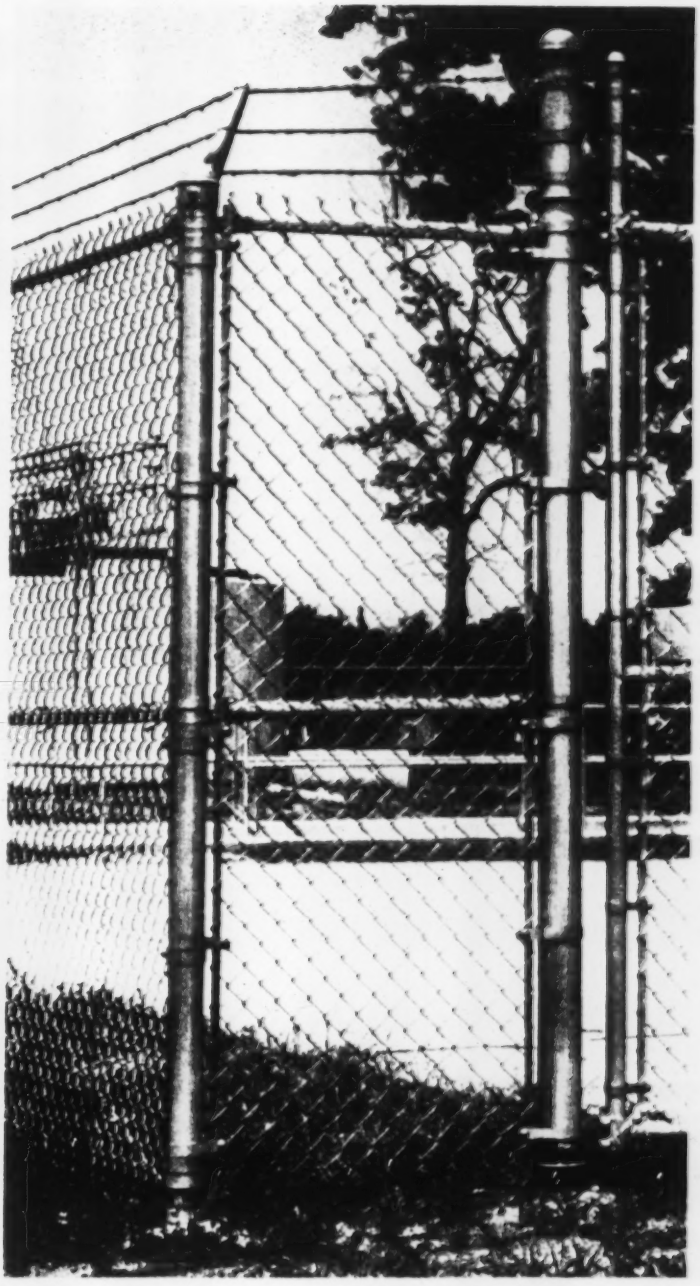
As a result of lobbying by Indian engineering companies, the government decided to engage only Indian consultants for its major industrial project. Previous to making this ruling, New Delhi had asked a French firm and a British firm to prepare preliminary project reports for an alloy steel plant with a 50,000 ton annual capacity.

On arriving in India, representatives of the two firms were told that the company chosen for the project would have to work under a sub-contract from an Indian consulting firm.

Both companies agreed to accept this position. But the discussion came to a halt when the Indian Government insisted that the chosen firm must take full responsibility for the job. The French company and the British refused to consider this condition.







with Aluminum THIS FENCE IS MAINTENANCE-FREE!

Chain Link Fencing of Alcoa Aluminum Needs No Protective Painting

Because aluminum supplies its own protection against highly corrosive industrial elements, applications throughout the years have proven advantages more than skin deep. Alcoa® Aluminum alloys age to a pleasing shade of gray and need no painting to preserve appearance or strength.

The superior combination of durability and appearance in chain link fencing of Alcoa Aluminum is evidenced in installations over 30 years old. Alcoa Aluminum consistently outlasts conventional installations . . . with an absence of maintenance cost.

Check these other advantages you get with Alcoa Aluminum:

High Strength—Average tensile strength of Alcoa's new alloy is 57,500 psi.

Easy Erection—Light weight means less labor.

Readily Available—Reliable manufacturers and erectors in 48 states. Contact your nearest Alcoa sales office.

For your copy of 12-page illustrated booklet and a summary of recently bid prices on 4-ft-high and 6-ft-high all-aluminum fencing, write to Aluminum Company of America, 2056-G Alcoa Building, Pittsburgh 19, Pa.

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

Speeds construction of longest inland bridge in Texas with

GULF MAKES THINGS

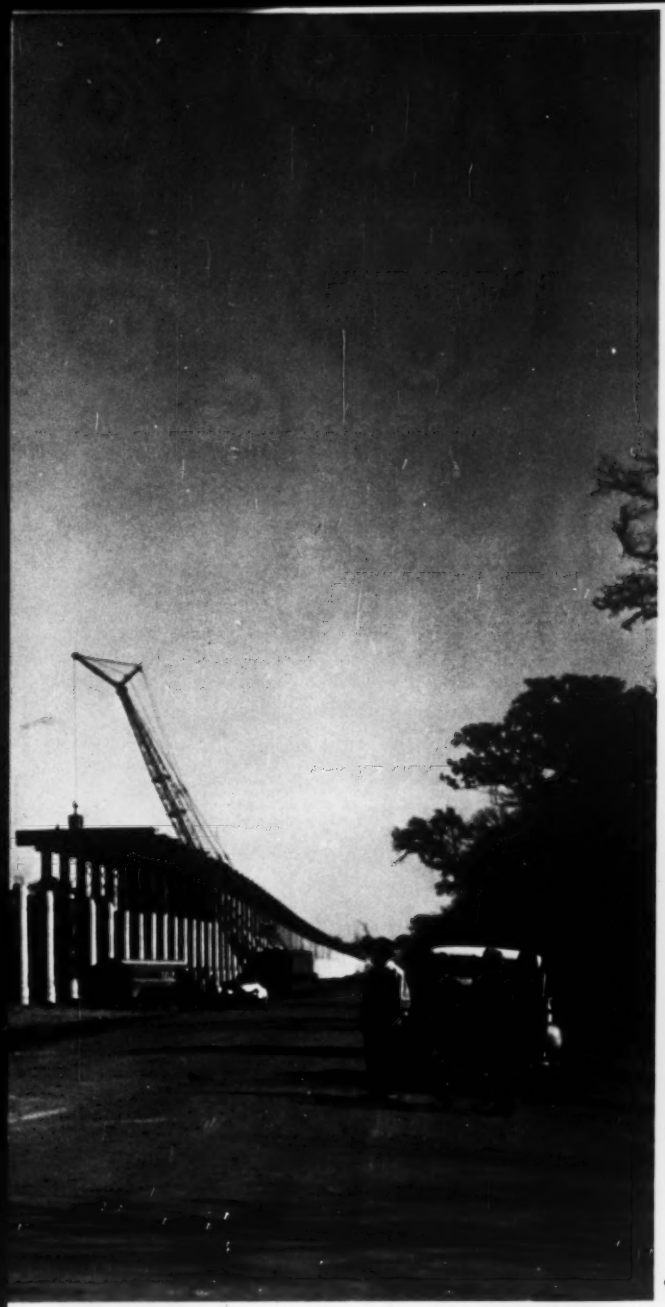
Most bridges span rivers or canyons. But deep in the heart of Texas, the new Miller's Crossing Bridge is being built across a dry basin which will soon become a man-made lake covering a 57 square mile area.

The new lake and the bridge are part of the $20,000,000 Iron Bridge Dam and Reservoir being built for the city of Dallas and the Sabine River Authority. The reservoir will provide water for Dallas and Greenville. Also excellent recreational facilities.

The two-mile Miller's Crossing Bridge will be the longest inland bridge in Texas. Substructure and decking are being formed with concrete supplied by Wemix Company of Greenville, Texas, subcontractors to the builders of the bridge, Cage Brothers of San Antonio.

Gulf supplies Wemix with all fuels and lubricants used in their equipment. Construction of the bridge is running ahead of schedule—good evidence that Gulf makes things run better for Wemix and for the whole project as well.

Clean-burning Gulf fuels and clean-working Gulf lubricants keep Wemix's engines running cleaner and longer between overhauls. What's more, Wemix gets



Only lift of its kind in the country. Hydraulic hoist, designed by Cage Brothers, lifts steel pans into position five at a time. Watching operation are, left to right, V. F. Hickman, Project Manager, Cage Bros.; H. D. Baker, Owner of Wemix; H. Maden, Job Foreman, Cage Brothers.

Shown here are, left to right, H. W. Inglish, Jr., Gulf Distributor at Greenville; H. D. Baker, Owner of Wemix; L. W. Kendrick, Gulf Assistant District Manager, Tyler District.

Wemix Company pouring concrete for substructure of the new two mile long Miller's Crossing Bridge

Gulf fuels, lubricants and service...

RUN BETTER!

GULF

job-site delivery of Gulf products in volume, and can always rely on Gulf representatives for on-the-job technical assistance.

That's the kind of service you can count on from Gulf. Small wonder that in Gulf's marketing area, contractors on big construction projects use more Gulf fuels and lubricants than any other brand.

How about your projects? See how Gulf makes things run better. Just call your nearest Gulf office. Meanwhile, send for Gulf "Contractors' Guide"—the maintenance "bible" for heavy equipment.

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Please send latest edition of ☐ "Contractors' Guide"
☐ Gulf and Your Business

Name

Title

Company

Address

City Zone State

SAFE and SECURE

Ric-wiL Underground Piping Systems are safe and secure from tornadoes and hurricanes . . . virtually unaffected by surface weather conditions. In recent years, changing weather patterns have brought severe storms to areas in the United States that had never before experienced them. Ric-wiL Underground Systems remained unharmed . . . and in an emergency situation, immediate heat can be an important factor in restoring operations as quickly as possible.

Ric-wiL Systems have been proven by installations totaling more than 8,000,000 lineal feet. They are completely prefabricated and shipped to the job sight ready for installation. Production time and delivery can be definitely predetermined.

Write, wire or phone for information on the many types of Ric-wiL Systems available.

Send for new revised catalog.

Quality Piping Systems . . .
. . . of Exceptionally High Thermal Efficiency

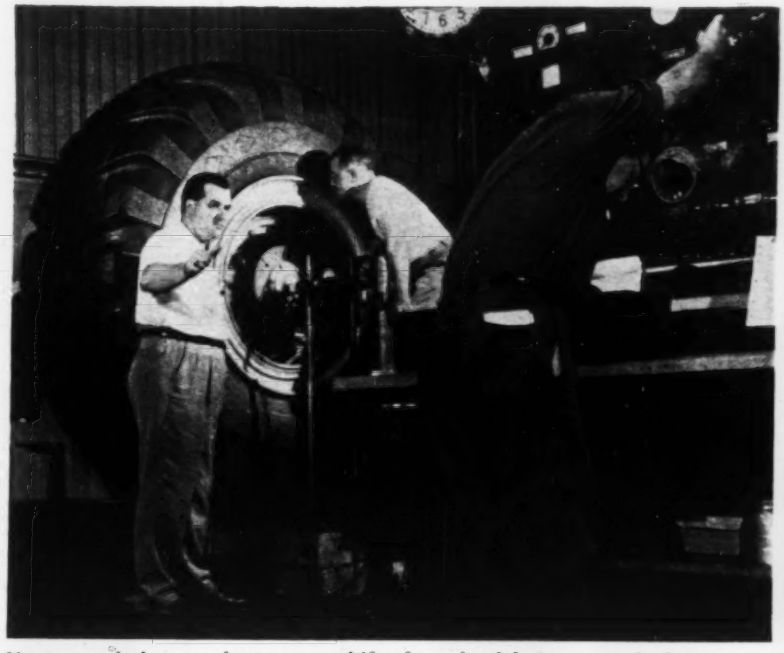
SINCE 1910

RIC-WIL INCORPORATED — PREFABRICATED INSULATED PIPING SYSTEMS

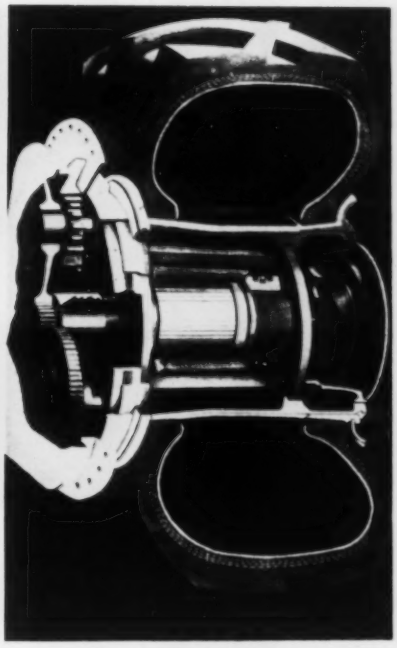
See our catalog in Sweets

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED



No transmissions, axles or gearshifts for wheel being tested above.



It's run by an electric traction motor.

Coming: Electric Wheel for Contractors

A new electric wheel is in production for the construction and mining industries. Its motor can develop 380 rim hp and four units can move a 125-ton vehicle at speeds up to 35 mph.

The wheel is a product of General Electric Co., a pioneer in the field of unitized electric propulsion mechanisms. Company representatives say that negotiations for sale of the wheels are currently under way with at least three major manufacturers of earthmoving equipment. This means that contractors may soon be able to purchase a variety of machines, made by several manufacturers. Or, if they prefer, they can purchase the electric wheel units and attach them to rigs of their own device.

Until now there has been only one such unit produced, and it has been available only as an integral part of machines made by a single manufacturer, R. G. Le Tourneau of Longview, Texas.

Mounting of the General Electric wheel is simple because the unit, except for its power supply, is completely self contained and requires no exterior axle. The magnet frame (motor housing itself) serves as the axle, and a unit can be attached to any flat surface by bolts slid through holes in a mounting plate carried on the inner side of the wheel.

For mining or tunnel work, where travel is limited, the current for the electric wheel can be generated from a central plant, carried through overhead wires and picked up by a trolley mounted on the vehicle. This would eliminate the need for running internal combustion engines in confined quarters, and reduce the air pollution problems resulting from exhaust gases.

It would also permit the use of smaller and lighter vehicles of greater payload, since the bulk and weight of generators and gasoline or diesel engines is eliminated.

For general construction work, where machines move far afield, the power supply source must be carried by, or with, the vehicles. On test vehicles the power supply source has consisted of a 600 hp diesel engine coupled directly to a multiple field direct-current generator. On these units, the engine and generator run at a constant speed. Vehicle travel speed is controlled simply by a throttle working through rheostats that control the current flow to the wheel motors. Travel speed of the trolley unit is controlled in the same way.

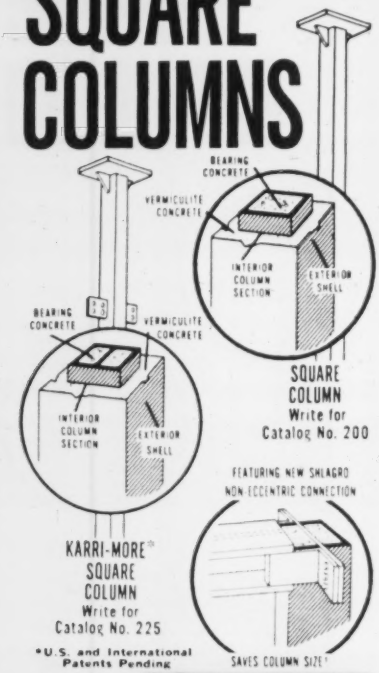
On both the trolley units and those carrying their own power source, braking is identical. Release of the throttle reduces or eliminates current flow to the motors, which then act as generators. Current from an armature lead wire crosses a resistance grid, places a load on the motors and forces them to act as brakes.

Overheating of motors during heavy braking operation is prevented by mechanical blowers run from the engine power take-off, the generator tail shaft, or from separate a-c or d-c power supplies.

In addition to the dynamic braking provided by the electric motors, the wheels are equipped with hydraulically activated airplane type mechanical disk brakes. These are used as slow speed and parking brakes.

The manufacturer foresees use of its electric wheel on a great variety of construction machines—and particularly on those that must contend with rough or slippery terrain. Among others, these would include end, bottom and side dump trucks; self-loading scrapers; cross country trains; and snow or swamp buggies. Locomotive and Car Equipment Department, General Electric Company, Erie, Pa.

specify SHLAGRO
FIREPROOF
SQUARE
COLUMNS



SQUARE COLUMN
Write for Catalog No. 200

KARRI-MORE* SQUARE COLUMN
Write for Catalog No. 225
*U.S. and International Patents Pending

another FIRST by the PIONEERS of SQUARE columns!
SHLAGRO
STEEL PRODUCTS CORPORATION
SOMERVILLE, MASS.

I am interested in Shlagro Fireproof Structural Square Columns and other Shlagro products checked below:

- ☐ #200 — SHLAGRO SQUARE COLUMNS
- ☐ #225 — SHLAGRO KARRI-MORE SQUARE COLUMNS
- ☐ #100 — STOCK STEEL ROOF TRUSSES
- ☐ #150 — STOCK STEEL LONGSPAN JOISTS
- ☐ #250 — SHLAGRO SHEAR HEADS
- ☐ #300 — STOCK STEEL TURNTABLES
- ☐ #350 — SCAFFOLDING
- ☐ #375 — SHLAGRO NO-DIAGONAL LONGSPAN JOISTS
- ☐ #400 — EGG-SHELL STEEL PLATE ROOFS
- ☐ #450 — SHLAGRO DOME STRUCTURES
- ☐ #500 — STOCK STEEL RIGID FRAMES
- ☐ #550 — STOCK STEEL VERTICAL MEMBER TRUSSES
- ☐ #600 — STEEL VERTICAL LIFT DOORS
- ☐ #650 — NO SHELL PRE-CAST FIREPROOF REINFORCED CONCRETE COLUMNS
- ☐ #700 — STEEL FLOORSPAN GIRDERS
- ☐ #725 — SHLAGRO TRIANGULAR GIRDER
- ☐ #750 — STEEL WELDED PIPE TRUSSES
- ☐ #775 — KARRI-MORE BEAM AND GIRDER
- ☐ #800 — STOCK STEEL MOMENT CONTOUR BEAM AND GIRDER
- ☐ #825 — TAPERED BEAM AND GIRDER
- ☐ #850 — PREFAB BUILDNGS—FLAT ROOF
- ☐ #875 — PREFAB BUILDINGS—PITCH ROOF

name_____
title_____

Please attach to your professional letterhead and mail to
SHLAGRO STEEL PRODUCTS CORP.
SOMERVILLE, MASS. EN-7

First public understanding, then action.

Lauren Grayson Heads AWWA

"What the public does depends upon what it understands." This is the belief of Lauren W. Grayson, who last week became president of the American Water Works Association (see Contents p. 17). The belief is a succinct expression of the driving force behind one of AWWA's major current efforts—a broad campaign to tell the U. S. public what must be done to create, preserve and make use of public water supplies.

Lauren Grayson is a veteran at creating understanding. A young oldtimer at 52, he has been in the municipal utility field in California for 33 years. And he has been a diligent AWWA member for 26 years.

Mr. Grayson is general manager and chief engineer of the Glendale, Calif., Public Service Department, which furnishes water and electricity for the city of 117,000. Before going to Glendale in 1951, he had been with the Riverside, Calif., department of public utilities since 1926 and had been its general manager since 1942.

• **Next year important**—The new president expects the forthcoming year to be one of the most significant in the history of the 12,500 member AWWA. He lists three programs of major importance: water works advancement, do-it-now and certification.

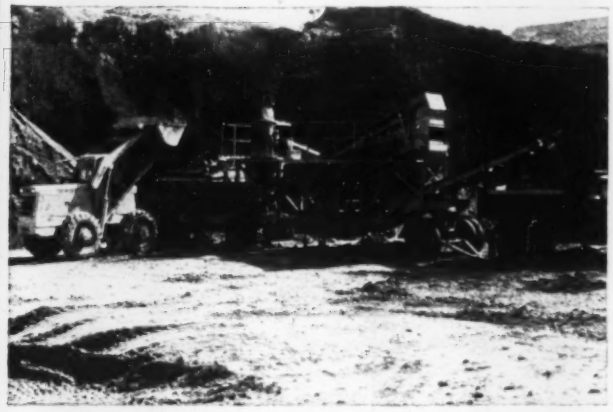
The water works advancement program is aimed ultimately at improved water service. Efforts will fall generally into two areas: professional advancement and community relations. Professional advancement will be aimed at water works operators and management. And on behalf of community relations, AWWA is marshalling every facility available to provide information to the public. The program is under a national committee, aided by an additional AWWA staff member.

The do-it-now program, which came out of last year's Dallas meeting, encourages installation of needed plant facilities without further delay. Although developed during a period of recession, this program is not intended as an anti-recession measure. Mr. Grayson points out that water utilities can save many dollars by building now ahead of probable future cost increases.

The program developed to certify equipment materials and supplies has not yet been formally launched, but it has been under study for four years. It is aimed at simplifying inspection and

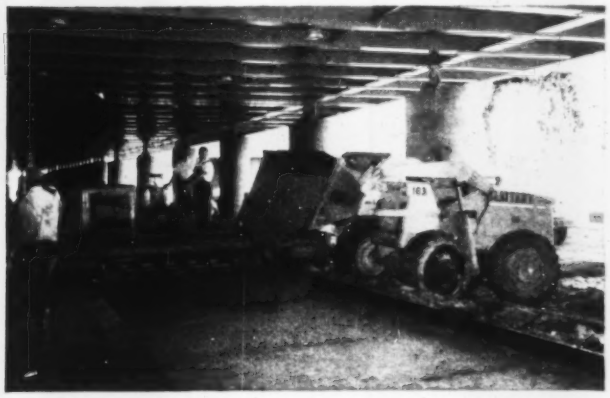
SOME UNUSUAL WAYS

Michigan Tractor Shovels are saving time and money for paving contractors around the country



Feeds portable crusher—Making good use of its high lift, Michigan Model 125A digs and dumps raw bank gravel into hopper of 100-ton-per-hour base material plant. Location: Southern Hills Inc pit, Dayton, Ohio.

Breaks, loads asphalt—Before resurfacing street in Worcester, Mass., Contractor Charles Chaffee uses 1¼ yd Michigan to strip old asphalt. No "ramming" is required—powerful breakout quickly shatters paving.



Pours concrete—Hauling concrete in Michigan Tractor Shovel bucket, Slattery Rock Corp. solves problem of laying 6 lanes of New York's Deegan Expressway under low viaduct. Two of these maneuverable "buggies" needed only 4 hours, 200 to 250 trips to pour 800 ft of each of 12 ft lane.

Grades shoulders—Special side bucket attached to Michigan 175A does jobs not possible with grader drop-blade . . . including filling holes, distributing gravel, removing spoil next to newly-poured slab. Attachment, designed by Villa Contracting Co, is helping widen 27 mi of N.J. Garden State Parkway.

Cleans pavement—Highway must stay open, said Nashville officials, so Wright & Lopez do cleanup with small, agile 16 cu ft Michigan. Only 4'2" wide, 10'8" long, unit works rapidly, doesn't block traffic, doesn't damage newly-set pavement.

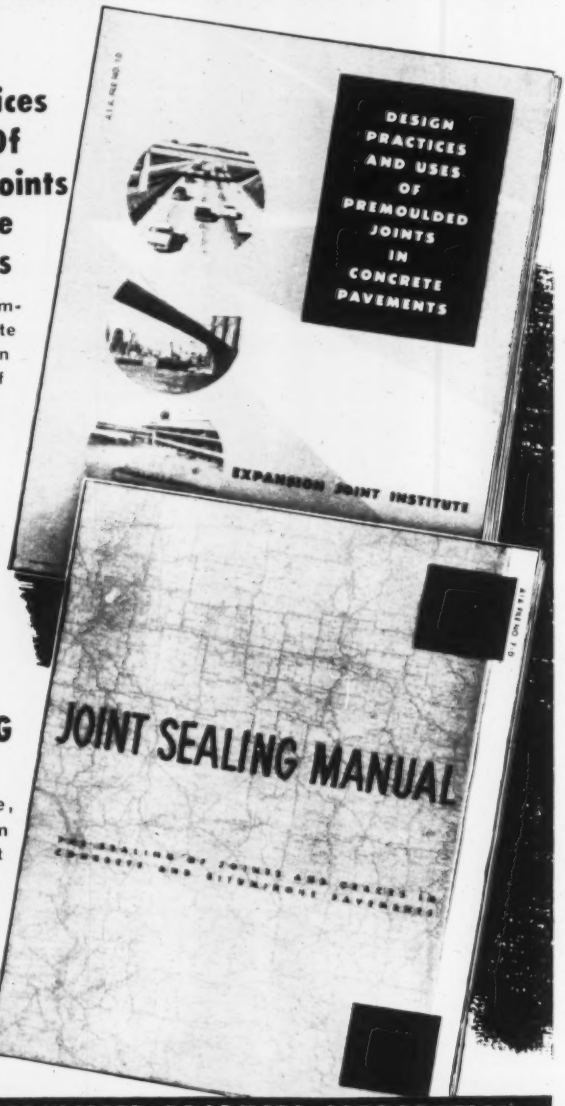
Carries pipe—One of Peter Kiewit's Michigans serves as all-around handyman on company's Indiana Turnpike contract. This 95 hp model lifts up to 11,000 lbs, carries 5,500 lbs at 4 mph. Note excellent all-around visibility given operator.

FREE !!!!

HOW TO DESIGN, CONSTRUCT, SEAL AND MAINTAIN JOINTS IN CONCRETE PAVEMENT

Design Practices And Uses Of Premoulded Joints In Concrete Pavements

Authoritative, complete, and up-to-date manual on design and construction of joints in concrete pavement. 23 pp. Illustrated.


DESIGN PRACTICES AND USES OF PREMOULDED JOINTS IN CONCRETE PAVEMENTS
EXPANSION JOINT INSTITUTE
JOINT SEALING MANUAL

JOINT SEALING Manual

Contains complete, factual information on materials, equipment and methods used in sealing joints and cracks in concrete pavement. 18 pp. Illustrated.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street • Chicago 38, Illinois

Clip and Mail Coupon Today!

Gentlemen: Send me without cost or obligation:

☐ DESIGN PRACTICES AND USES OF PREMOULDED JOINTS
☐ JOINT SEALING MANUAL

Name _____ Title _____
Company _____
Address _____
City _____ Zone ____ State _____

acceptance procedures by the large majority of water systems, that is, the small ones (80% of the water utilities in the U.S. serve less than 10,000 customers). The new AWWA head hopes an acceptable policy can and will be developed in the next year.

• **Glendale system**—As general manager and chief engineer of Glendale's Public Service Department, Mr. Grayson operates the water and power systems. He reports to the city manager in a council-city manager form of municipal government.

Glendale is located in a foothill region some 25 miles from the Pacific Ocean. The city is a member of the Metropolitan Water District of Southern California, but receives only about 10% of its water supply from MWD. A group of wells in the Los Angeles river basin furnishes 80%. The remaining 10% comes from wells in the Verdugo Canyon area at the upper end of the town.

A peak day for the Glendale system is about 44 million gallons. The system has good ground-level storage totaling 176 mg. Pumping is required to move most of the water from source of supply to the reservoirs. A minimum amount of treatment is necessary—lime and chlorine. This is primarily aimed at combating the bacteria crenothrix and stabilizing the balance of acidity and alkalinity.

Glendale, which might be called an upper middle-class community, is almost completely built up. Thus, no great increases in water demand are anticipated. Any increase that might come would probably be from a gradual increase in multifamily dwellings. And such additional supplies as are needed can be obtained from the Metropolitan Water District system.

Mr. Grayson served as chairman of AWWA's California section in 1949, and as a national director of the association from 1952 to 1954. He was a member of the committee on formation of a water resources division and chairman of that committee in 1949. He also chaired the association's water works management division in 1956. He has served on many state and national committees. In 1958 he received the George Warren Fuller Award, which AWWA gives annually in recognition of distinguished service in the water supply field.

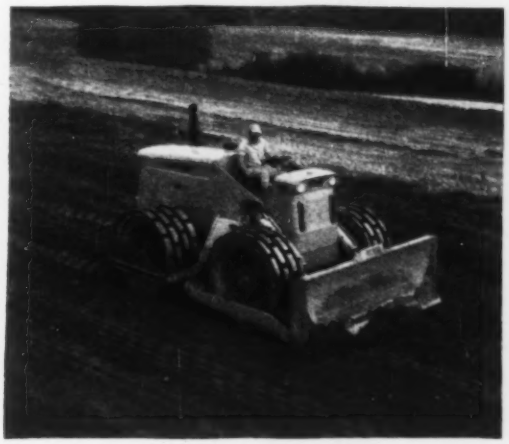
As director of a large utility, he served a term as president of the California Municipal Utilities Association in 1952 and 1953. He is also a member of several professional groups and is a registered professional engineer in the State of California.

MICHIGAN DOZERS...4 sizes*... job-proved coast to coast

*MODEL 180-165 hp | *MODEL 280-262 hp | *MODEL 380-375 hp | *MODEL 480-600 hp

KANSAS

Wet, sticky hauler-dumped fill proves no problem for high-traction 375 hp Model 380 on Superhighway. Owner: Bennett Constr Co, Bethel.



OHIO

Tires replaced by steel wheels, this Model 180 dozes and compacts clay fill. Owner: V. N. Holderman & Sons, Columbus.

GEORGIA

Replacing crawler tandems with 600 hp Model 480 resulted in 14 more scraper loads per hour, 3.8 more yds per load, $123 per hour additional profit. Owner: Hugh Steele, Inc, College Park.

CALIFORNIA

Sand fill at Oakland Airport has no effect on Model 380's tires yet it wore out crawler tracks in *6 weeks*. Owner: Utah Construction Co, San Francisco.

MINNESOTA

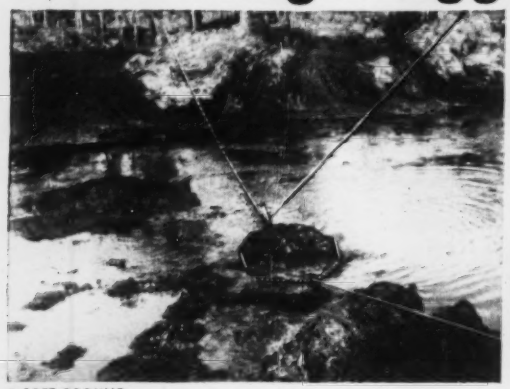
Fast 262 hp Model 280 handles *both* rock fill—360 loads, 5,000 yds per day—*and* shovel cleanup 3 mi away. Owner: Alley Constr Co, Faribault.

CLARK EQUIPMENT

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2401 Pipestone Road, Benton Harbor 21, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

Got A Tough Digging Job?



● SOFT GROUND

● DEEP WATER

● NARROW SPACE

● STEEP HILLS

Use A Sauerman DragScraper

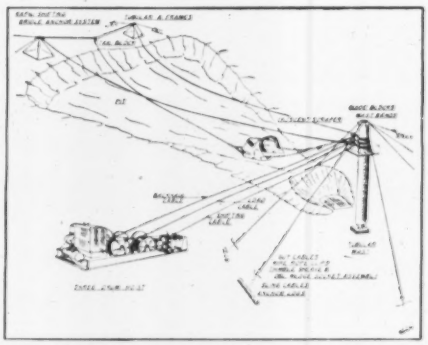
● **SOFT GROUND**—Sauerman DragScrapers work on surfaces where wheeled equipment cannot go and where mats are required to operate a dragline. The DragScraper digs and hauls its load quickly at ground level to hopper or pile. It carries a payload of two to three times its weight. You are not paying the power costs of a heavy machine with a handling capacity that is just a small portion of its weight.

● **NARROW SPACE**—A DragScraper can be operated through an opening no larger than the bucket's width. They are used successfully in culverts, sewers, tunnels, under bridges and buildings. Locations with limited space and head room . . . unworkable with other equipment . . . are handled efficiently and economically with a DragScraper.

● **DEEP WATER**—A Sauerman DragScraper will dig as much as 100 ft. below water... this is far below the safe depth that a dragline bucket can go without the danger of undermining and overturning the machine. Use a DragScraper for trenching, digging channels, lakes or for beach construction.

● **STEEP HILLS**—These are routine for a DragScraper. Material can be taken from anywhere on the bank. Digging from the top of the slope eliminates cave-ins—and the DragScraper gives an extra bonus by pushing additional material in front of the bucket on its way down the slope.

The Sauerman DragScraper operator and hoist is always located away from any hazardous area. It is designed for years of safe, continuous duty, handling bucket sizes up to 15-cu. yds. over spans to 1000 ft. or more.



THE SAUERMAN METHOD—*showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

When you have a "tough-to-handle" job consult Sauerman engineers about Sauerman equipment and the Sauerman Method. Request Catalog A, also the Sauerman News and field reports.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Toutline Cableways • Durolite Blocks

Obituaries

Charles M. Jones, 64, vice president, John A. Roebling's Sons Co., Trenton, N. J. As assistant bridge engineer he had a part in the design and erection of the cables for both the George Washington and Golden Gate bridges. Later he was vice president in charge of engineering, and for the past 12 years had been in charge of the company's public and industrial relations.

J. Warren McCafferty, a civil engineer with the Delaware State Highway Department for the past 25 years.

Robert E. Hiller, 56, a civil engineer with the South Carolina State Highway Department, in Greenville.

William Kitson, 75, engineer with the Ontario Department of Highways, in Toronto. He joined the department in 1919 after service in World War I. He was engaged in the material and research section until his retirement in 1953.

Virgil Knowlton, 50, vice president and general traveling superintendent of the Knowlton Construction Co., Bellefontaine, Ohio.

Matthew B. Guran, 69, founder of the M. B. Guran Coal & Contracting Co., Akron, Ohio, and the M. B. Guran Ready-Mix Concrete Co. He was the general contractor on the first portion of the Akron Expressway and the contractor on the Harvey Firestone Memorial Bridge.

Martin Frisch, 65, a vice president and director of Foster Wheeler Corp., engineers and constructors of New York City. He joined the firm in 1929 as chief engineer of the pulverizer division. He held more than 50 patents in heat engineering.

William Ingram, 47, an engineer with Potomac Electric Power Co., Washington, D. C. He graduated as a civil engineer from Rensselaer Polytechnic Institute in 1934.

George H. Henderson, 75, recently retired chief highway engineer of Rhode Island. He spent almost 50 years in the state's service. He was active in programs of highway research.

F. Warren Hoffman, 74, civil engineer and founder and president of the Warren Hoffman Co., Canton, Ohio., a construction company. He built some of Canton's outstanding buildings and took an important part in the development of the city's park system.

From coast to coast, owners report *"more work done"* with Michigan Scrapers

CALIFORNIA

U. S. Borax & Chemical Corp, digging out largest known deposit of sodium borate in world, gets BIG production from team of 29 yd Model 310 Michigan Scraper and 600 hp Model 480 Michigan Dozer. Payloads weigh out at 26 yds—3 yds more than biggest track-type pushers could load previously.

TEXAS

T. R. Vardeman & Son Construction Co, digging lake for City of San Augustine, posts good production average with their Model 210 Michigan Scraper. On 2,400 ft cycles, 19-yd rig moves 15 loads per hour.

KENTUCKY

Holloway & Sons Construction Co, building quarry-to-river dock access road, loads Model 110 Michigan Scrapers with small (85 hp) pusher, yet gets 8¾ pay yds, scale-weighed, per trip. For added versatility, the 10½ yd pans interchange with 13 ton Rear Dumps. Scraper is also available in 4-wheel towed model.

FLORIDA

S. M. Wall Co, building a 10 mile, 120,000 yd cutoff around city of Archer, teamed two Model 210 Michigan Scrapers with a Model 280 Michigan Dozer: got 14 pay yd, 40 sec loading. Scrapers and pusher provided the efficiencies of *identical power trains:* matched speeds, easier maintenance, lower parts stocks.

NEW JERSEY

Sallcon Inc, forced by high labor costs to lay off men after each small job, then rehire for new contracts, solved critical operator training problem with Michigan Scrapers. Power-steered, power-shifted, torque converter Model 110's are "so easy to run," says owner, "new men become proficient after only a few cycles."

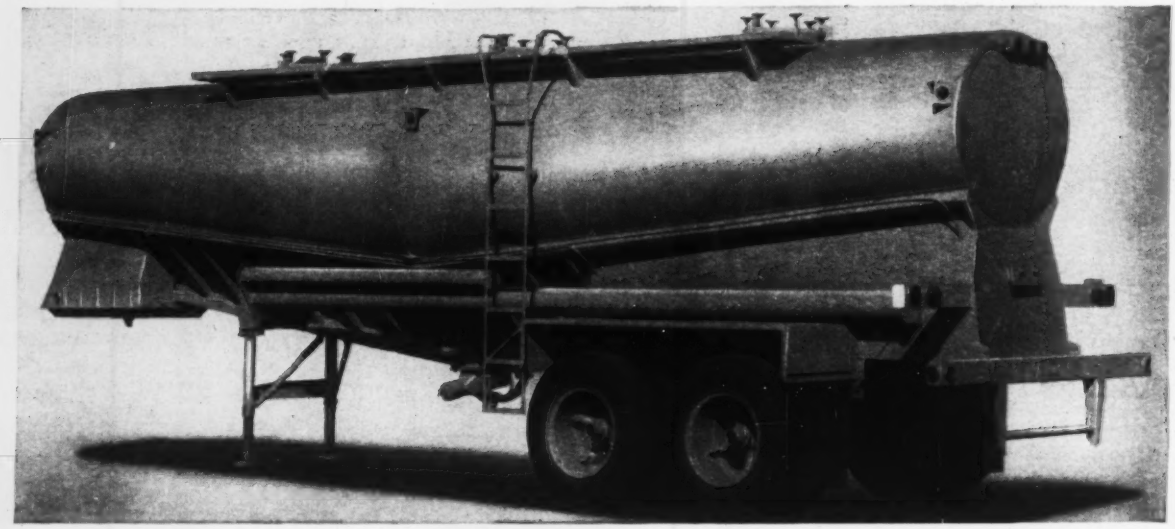
CONNECTICUT

Brancifort Bros, grading new shopping plaza, moved 1,400 yds per 9 hour day with their two Model 110's. Like all Michigans, units are fully hydraulic; only cable is short length, yoke to apron.

CLARK® EQUIPMENT

Michigan is the registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2401 Pipestone Road, Benton Harbor 17, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

NEW FRUEHAUF "AIRSLIDE"* PRESSURE TANK-TRAILER



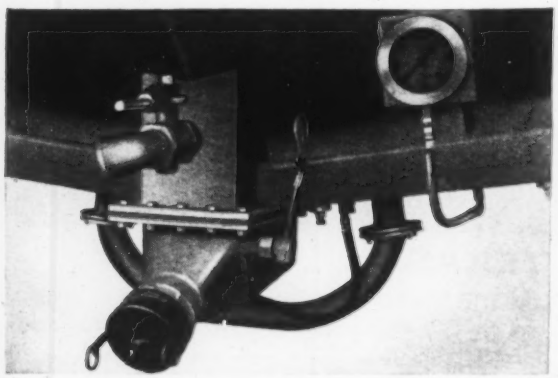
32' unit with 105 to 115-barrel capacity (cement basis) weighs only 11,115 pounds, complete

. . . Unloads Up To 115 Barrels of Cement, Barites Or Powdered Chemicals In Only 30 Minutes!

Faster unloading and lower equipment cost are the two big assets of Fruehauf's new lightweight, high-capacity "Airslide" Pressure Tank-Trailer for bulk cement, barites, and powdered chemicals.

This economical unit is capable of pumping such aerated materials at a rate of 4 barrels per minute, as high as 80 feet or more, at 13½# pressure. The Trailer has a 105 to 115 barrel capacity in terms of cement. Unloading is easy and economical anywhere. Discharge acceleration is controlled manually by a lever-type valve, of exclusive, sturdy, Fruehauf design, which requires *minimum* effort to operate.

Safety equipment includes a pressure gauge which prevents excessive pressure during discharge. The safety valve is set to open automatically at 14.7# pressure. Investigate this money-saving, time-saving new unit through your local Fruehauf Branch, or send the coupon for full details.



*"*Airslide*"—*Trademark, Fuller Co.*

FRUEHAUF TRAILERS

For Forty-Five Years—More Fruehauf Trailers On The Road Than Any Other Make!

World's Largest Builder of Truck-Trailers

FRUEHAUF TRAILER COMPANY

10949 Harper Avenue • Detroit 32, Michigan

SEND FULL FACTS, WITH NO OBLIGATION, ON FRUEHAUF'S NEW "AIRSLIDE" PRESSURE TANK-TRAILERS

Name _____

Company _____

Address _____

City _____ State _____

Indiana Air Base Work 16% Under Estimate

Additions to the Bakalar Air Force Base, Columbus, Ind., for the Corps of Engineers, Chicago, went to two contractors for:

Contract	Amount	% of Total	% under Engr Est.
Paul A. Teergarden, Columbus-Taxiway widening	$266,183	59.0	18.5
George Bahre Co., Indianapolis			
Base communications building	52,000	11.5	10.5
Utilities, water storage additions & site improvements	133,000	29.5	12.4
Totals	$451,183	100.0	16.0

A. M. Kenney, Cincinnati, is the consulting engineer.

The lump sum bid of $52,000 for the 1-story, 1,800-sq-ft communications building, averages $28.88 per sq ft, including air conditioning system and cooling tower outside the building, with all lines between the tower and the building, and all utilities and services to points 5 ft outside the building line.

The utilities and services beyond that line, except for hot temperature hot water, which commences at a designated line within the building, include construction to points of connection with mains; electrical distribution facilities; water distribution and sanitary sewer main work; water pumphouse additions and ground storage reservoir; complete with drainage, grading, paving, walks, landscaping, seeding and related site improvements.

Minimum wages include: carpenters $3.25; cement masons $2.75; electricians $3.65; plumbers $3.40; unskilled laborers $2.05. Power equipment operators on buildings get $3.375.

Schedule A-Taxiway

1C Paul A. Teergarden, Columbus, Ind	$266,183
2 Kuno Constr. Co., Inc., Highland Park, Ill	305,236
3 McMahon Constr. Co., Rochester, Ind., and Berns Constr. Co., Indianapolis	326,527
EE A. M. Kenney, Cincinnati, O	326,479

Bids 2-20-59 Items	Unit	Quantity	Unit Prices 1C	2
Pavement, remove existing	sy	450	$1.04	$2.00
Excavation	cy	28,000	0.58	0.94
CMP, perf, or open jt B&S, extra str clay or concrete, subdrains 6"	lf	9,255	1.74	2.75
collector drain pipe, 6"	lf	1,150	1.91	3.10
Inlets	ea	2	535.00	600.00
Cleanout risers	ea	8	74.06	150.00
deadend	ea	10	74.41	120.00
Collector boxes	ea	11	202.40	300.00
Drywells, incl percolat lines	ea	1	1,809	1,830
Drainage structs, modify exist	ls	job	2,972	3,000
Conc pave, incl 4" filter crse 11" thick	sy	4,420	4.92	5.15
8"-6"-8" thick	sy	27,810	3.82	4.10
Cement	bbl	10,350	4.20	4.68
Fertilize, seed & mulch	ls	job	14,258	15,460
Pavement marking	ls	job	468.00	708.00
remove existing	ls	job	584.00	780.00
Airfield elec modifications	ls	job	35,000	35,100

Completion schedule: 330 cal day

Schedule B-Communications Bldg. & Utilities

1C George Bahre Co., Indianapolis	$185,000
2 P & H Constr. Co., Inc., Indianapolis	189,672
7 A. T. Gravelle, Indianapolis	237,960
EE A. M. Kenney, Cincinnati, O	209,910

Bids: 2-20-59 Items	Unit	Quantity	Unit Prices 1C	2
Base communications bldg	ls	job	$52,000	$67,707
Utilities & services outside bldg	ls	job	133,000	121,965a

a Contractor reported a $45,000 error in his original bid of $76,965. Engineers allowed corrected bid of $121,965.

Earth Levee Completes Flood Control Project

To complete the local flood protection program for the City of Barbourville, Ky, an $81,936-contract involves construction of a 600-ft compact earth levee an average of 5 ft high; one highway closure structure, and miscellaneous related work, including 300 ft of hand laid riprap.

Work is for the Corps of Engineers, Nashville. All four bids came in above the engineers' estimate. The award to Treadway Bros., Barbourville, was 8.1% below the second bid, but 17.3% above the estimate.

The government furnishes one manhole frame and cover.

Concrete must contain a minimum of six bags of cement per cu yd and attain a compressive strength of 3,000 psi.

Minimum wages include: carpenter, $2.25; cement mason, $2.10; shovel, tractor shovel and truck crane operators, $3.375; common laborer, $1.60.

1C Treadway Bros., Barbourville, Ky	$81,936
2 Rapp Lumber Co., Inc., Barbourville	89,190
4 Bush Building Co., Nashville, Tenn	106,015
EE Corps of Engineers, Nashville, Tenn	69,823

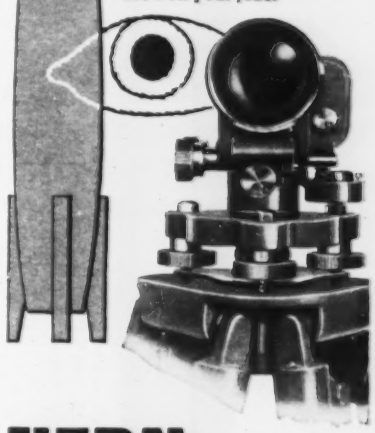
Bids: 4-22-59 Items	Unit	Quantity	Unit Prices 1C	2
Schedule A				
Clear & grub	ls	job	$800.00	$350.00
Excavation, stripping	cy	900	1.00	2.00
common	cy	300	1.50	2.50
borrow	cy	3,800	1.50	2.00
Levee embankment	cy	3,000	0.50	2.00
Roll for embankment, add	hr	8	25.00	25.00
Crushed stone	t	350	8.00	3.50
Storm drain, 10"	lf	380	3.50	3.50
18"	lf	24	6.00	4.50
24"	lf	620	10.00	5.00
Pipe arch, 58"x36"	lf	48	37.50	35.00
Subdrain, 10"	lf	234	3.50	3.50
Manholes, 2	ls	job	1,400	300.00
Catch basin	ea	1	100.00	150.00
Pipe sleeves thru clos struct	ea	3	40.00	50.00
Closure struct, U.S. Hwy 25E	ls	job	8,318	8,288
Aluminum stop logs	ls	job	4,000	3,000
Storage bldg, complete	ls	job	1,750	1,658
Padlocks	ea	13	30.00	5.00
Wtr bnd macadam base, 8"	sy	230	5.00	9.00
Bituminous surfacing, 2"	sy	230	3.00	2.25
Seeding (drain ditch downstream of structure A)	Msf	22	40.00	50.00
Water, apply additional	Msf	5	5.00	20.00
Drainage ditch, downstream of structure A, construct	ls	job	6,500	3,762
Concrete headwalls, 2	ls	job	300.00	300.00
Schedule B				
Clear & grub	ls	job	750.00	350.00
Excavation, common	cy	1,150	1.50	2.50
borrow	cy	500	1.50	2.00
Compacted fill	cy	1,070	0.65	3.00
Filter blanket	cy	425	10.00	4.50
Riprap, hand placed	cy	950	20.00	22.00
Schedule C				
Concrete steps	lf	650	10.00	20.00

Commence: 5-25-59. Compl: 11-23-59. Liq dam: $50 day

You're Not Behind The Times IF You're Behind a

KERN INSTRUMENT

Obsolete surveying tools are time-consuming, wasteful ... out of step with modern construction equipment used on your jobs.



KERN THE MOST MODERN surveying instruments available. Down-to-fundamentals, functional design ... maximum operational efficiency and portability ... reliable precision results.

KNOWN THE WORLD OVER for accuracy, speed, reliability, economy.

- Minimum set-up time
- Fast, effortless, simple operation
- Readings at a glance
- Exceptional clarity and contrast of image

★

For Full Information Write for Brochure V 554-I

PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL

Kern and Only Kern Offers You The Latest Designs of

Dr. Henry Wild

Kern SWISS The FINEST in SURVEYING EQUIPMENT

KERN INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.

Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face

All Fir boards, dimensions, planks No. 2. Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

		1x6 sds	1x8 sds	2x4 sds	2x6 sds	2x8 sds	2x10 sds	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	n†R	**$97 00**	**$120 00**	**$90 00**	**$90 00**	**$100 00**	**$100 00**	**$137 00**		
Baltimore	o	**100 00**	**100 00**	**100 00**	**105 00**	**110 00**	**110 00**	**125 00**		
		121 00g	*130 00g*	*130 00g*	*135 00g*	*135 00g*	*135 00g*	*152 00g*	*$180 00*	*$170 00*
Birmingham	n†r	**83 00**	**85 00**	**82 00**	**84 00**	**89 00**	**95 00**	**111 00**		
		80 00	*80 00*	*82 00*	*81 00*	*81 00*	*98 00*	*88 00*	*85 00*	*88 00*
Boston	ns	**105 00***f*	**105 00***f*	**111 00***f*	**111 00***f*	**111 00***f*	**120 00**a			
		109 00	*109 00*	*121 00*	*121 00*	*121 00*	*120 00*	*140 00*	*142 00*	*165 00*
Chicago	**	**123 00**	**126 00**	**120 00**	**134 00**	**142 00**	**143 00**	**138 00**		
		129 00	*129 00*	*142 00*	*140 00*	*140 00*	*141 00*	*139 00*	*139 00*	
Cincinnati	n*	**102 50**	**103 75**	**96 50**	**98 00**	**104 75**	**112 75**	**121 00**		
		110 75	*113 75*	*116 00*	*117 00*	*116 00*	*133 75*	*143 25*	*143 25*	
Cleveland	o**	**102 00**	**105 00**	**102 00**	**102 00**	**104 00**	**108 00**			
				118 00	*118 00*	*124 00*	*128 00*	*140 00*	*140 00*	*140 00*
Dallas	‡R	**78 00***k*	**85 00***k*	**80 00***k*	**80 00***k*	**78 00***k*	**78 00***k*	**125 00**		
Denver	n*	*Not in stock*		*124 50*	*130 50*	*130 50*	*151 50*	*142 00*	*160 00*	*180 00*
Detroit	‡	**138 00**	**140 50**	**138 00**	**136 00**	**143 50**	**143 50**			
		142 25	*142 25*	*155 25*	*151 50*	*160 00*	*165 50*	*204 00*	*221 00*	*221 00*
Kansas City	tn	**125 00**	**125 00**	**135 00**	**137 50**	**140 00**	**150 00**			
		135 00	*135 00*	*135 00*	*137 50*	*140 00*	*145 00*	*175 00*	*225 00*	*225 00*
Los Angeles	znu	*108 00*	*108 00*	*108 00*	*108 00*	*108 00*	*108 00*	*156 00*	*141 00*	*141 00*
Minneapolis	ov	*145 00m*	*145 00m*	*145 00*	*145 00*	*145 00*	*145 00*	*185 00*	*185 00*	*185 00*
Montreal	*bp	**84 00**a	**90 00**a	**84 00**a	**84 00**a	**99 00**a	**125 00**a			
		160 00	*160 00*	*160 00*	*160 00*	*160 00*	*160 00*	*170 00*	*170 00*	*170 00*
New Orleans	†n	**89 00**	**89 00**	**95 00**	**92 00**	**92 00**	**97 00**	**126 00**		
		198 00	*188 00*	*117 50*	*138 00*	*138 00*	*138 00*	*140 00*	*140 50*	*160 50*
New York	†	**119 00**	**120 00**	**129 00**	**129 00**	**129 00**	**135 00**	**245 00**		
				181 00	*181 00*	*181 00*	*184 00*	*174 00*	*174 00*	*174 00*
Philadelphia	nt	**110 00**	**110 00**	**110 00**	**114 00**	**119 00**	**124 00**	**135 00**		
				185 00	*185 00*	*185 00*	*185 00*	*145 00*	*145 00*	
Pittsburgh	st	**115 00**	**120 00**	**130 00**	**120 00**	**145 00**	**145 00**	**165 00**		
		140 00	*120 00*	*140 00m*	*150 00*	*155 00*	*200 00*	*220 00*	*200 00*	*200 00*
St. Louis	lnt	**124 00**	**126 00**	**134 00***d*	**134 00***d*	**134 00***e*	**136 00***e*			
				145 00	*145 00e*	*145 00e*	*147 00e*	*199 00e*	*199 00e*	*199 00*
San Francisco	nz	*92 00*	*92 00*	*98 00*	*98 00*	*98 00*	*98 00*	*110 00*	*151 00*	*151 00*
Seattle	n†	*68 00*	*78 00*	*82 00*	*80 00*	*82 00*	*81 00*	*95 00*	*100 00*	*100 00*
Toronto	*	**101 00**a	**106 00**a	**98 00**a	**96 00**a	**100 00**	**100 00**a	**110 00**a		
		112 00	*112 00*	*117 00*	*120 00*	*125 00*	*125 00*	*138 00*	*135 00*	*135 00*

LONG LEAF Y. P.		FIR PLYWOOD	
Merchantable grade up to 20 ft.		3/8" Interior plyscored,	3/4" Plyform
2x12 Rgh	12x12 Rgh	C-D gr.	grade*
$117 00	**$156 00**	**$172 00**	**$306 00**
175 00	**190 00**	*180 00*	*280 00*
115 00	**168 00**	*130 30*	*234 50*
		181 00*c*	**315 00***c*
166 00	**166 00**	*163 60*	*271 00*
138 00	**125 00**	*162 00f*	*200 00f*
		136 00a	*239 50a*
133 00	**160 00**	*112 50ac*	*200 00ac*
		154 00	*281 50*
151 50		*180 00qc*	*270 00qcR*
		160 00	*260 00*
		140 00	*260 00*
		200 00	*320 00*
120 00	**120 00**	*119 25*	*225 95*
160 00	**153 00**	*122 41*	*215 00*
245 00	**255 00**	*131 20a*	*250 60a*
		170 00AR	*250 00A*
160 00	**185 00**	*225 00*	*295 00*
		179 46achj	*281 32ach*
		162 00A	*200 00A*
		125 00kmq	*250 00kmq*
99 00a		*245 00*	*319 00*

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. •a Spruce. •b Federal tax exempt, add 6% mun. & prov. tax. •c 5M lots. •d 8, 10, & 12 ft. lengths. •e 8 to 16 ft. lengths. •f Hemlock. •g No. 1 common. •j 8 ft. lengths. •k No. 3 common. •l Add 2% sales tax. •m Up to 16'; No. 3 western pine. •n Less 2% disc. 10 days. •o Less 2% disc. 10th. •p Less 1% disc. 10 days. •q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. •r for f.o.b. city price add $8 for pine, $35 for fir. •s asd trucklots •t trucklots del. •u Retail LCL yard. •v Retail LCL, del. •w add 6% mun. & Prov. tax. •x add 4% sales tax.

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels. 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, 3/8", $171.00; 3/4", $191.00. Exterior, waterproof, 3/8", $175.00; 3/4", $195.00. •a Delivered. •c Truck lots. •d A-C exterior. •e LCL. •f less 1%, 5 days. •g less 2%, for cash. •h less 2% disc, 10 days. •j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS — Discounts from jobbers list, Feb. 1, 1950a — Single or Double Strength A quality	B quality	EXPLOSIVES — Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots
Atlanta	78%c	80%c*q*	$0.2695
Baltimore	74%c*d*	74%c*d*	.2695
Birmingham	82%c*f*	82%c*f*	.2495
Boston	72+10%c*p*	72+10%c*p*	.2695
Chicago	72%c	72%c	.2495
Cincinnati	74%c	74%c	.2695
Cleveland	74-2-10%c	74-2-10%c	.2695
Dallas	76%c	76%c	.2770
Denver	73.5%c	73.5%c	.2695
Detroit	74-10-10%c	74-10-10%c	.2695
Kansas City	76-10-10%c	76-10-10%c	.2695
Los Angeles	$12.88/17.32*b*	$10.45/14.13*b*	.2695
Minneapolis	71-10%c	71-10%c	.2695
Montreal	40-10.5%c*b*	40-10.5%c*b*	23.20*b*
New Orleans	76%c*q*	76%c*q*	.2695
New York	79%c*l*	79%c*l*	.5030*q*
Philadelphia	78%c	80%c	.2695
Pittsburgh	72%c	72%c	.2695
St. Louis	72-10-10%c*mo*	72-10-10%c*mo*	.2695
San Francisco	60%c	73%c	.2695
Seattle	$8.85/11.55*bq*	$6.41/8.67*bfp*	.2695
Toronto	$6.49/9.57*b*	$5.90/8.70*b*	.2695

Price of 60%c Ammonia Gelatin is $0.15 per lb. higher than 40%c in U. S., $1.75 per 100 lbs. higher in Canada

Glass: •a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. •b sales tax extra. •c 77% for single strength. •d From 6.15.52 list. •e 77% for double strength. •f Single strength; double strength, 83%. •g From 8.1.58 list. •h Ss, ds, 40-in. •i 20 boxes min. •j CL quantity. •k eff. 12.58. •l eff. 10.15.58. •m less 2% disc, 10 days. •n less 1% disc, 10 days. •o add 2% sales tax. •p less 1% for cash. •q less 2% for cash

Explosives: * Cartridges of 1 1/4" diameter or over, in standard lengths. •g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%... Forcite 60%..., $23.80. In fiber cases: forcite 40%..., $23.20; forcite 60%..., $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C.L. 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken. † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	By Rail Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	
12" 2-ft. from butt	6-in.	40 to 44-ft.	69	
12" 2-ft. from butt	6-in.	45 to 49-ft.	73	
12" 2-ft. from butt	6-in.	50 to 54-ft.	77	
12" 2-ft. from butt	6-in.	55 to 59-ft.	81	
14" 2-ft. from butt	6-in.	60 to 64-ft.	87	
14" 2-ft. from butt	6-in.	65 to 69-ft.	92	
14" 2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14" 2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14" 2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14" 2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15 1.20

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		4.00a		4.50a
New York	S. L. Sap Pine	2.50	4.00	3.00	5.00
	Mixed Oak	2.50	4.00	3.00	5.00
Philadelphia	Red Oak	2.85 4.05	4.40 4.90	3.20 3.40	4.40 4.90
St. Louis	Mixed Oak	2.65	2.90a	2.90a	3.25a/k
San Francisco	Douglas Fir	2.72c/	3.85c/	3.64c/	5.05c/

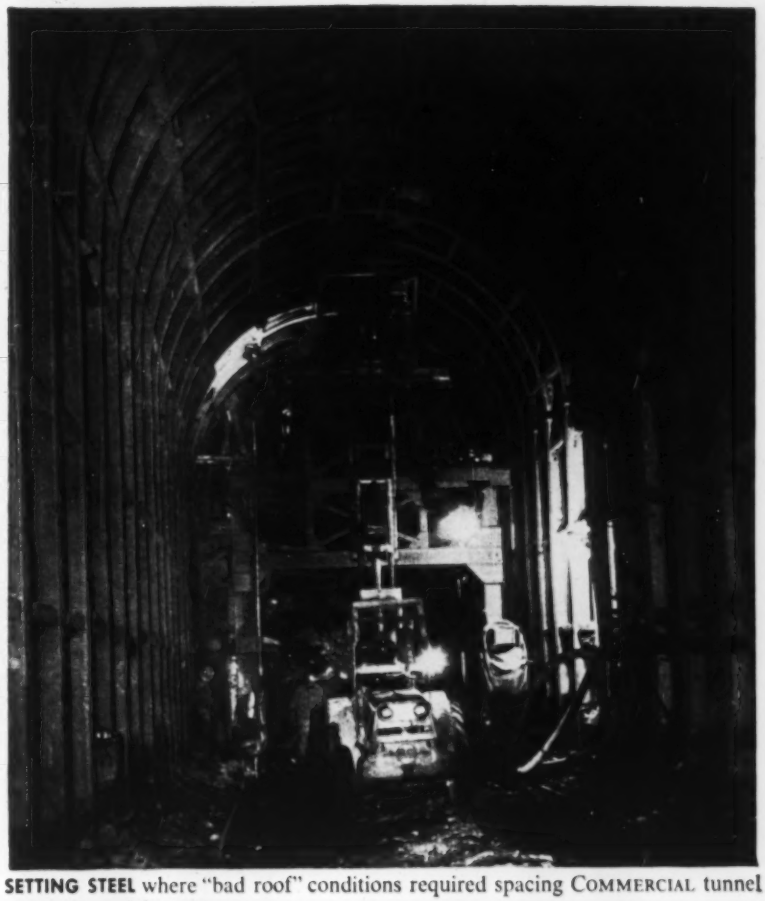
Tr. Treated: Untr. Untreated. aCreosoted. cEmpty cell. cGreen f.o.b. cars. g 7 x 9 x 8'6" * Add 75c tie freight charge to Birmingham. •k 7" x 9" x 9 1/2"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

TUNNEL WORKERS swing into position 8" H-beam side post which supports arch rib.



SETTING STEEL where "bad roof" conditions required spacing COMMERCIAL tunnel supports on 4-foot centers.

How to Support a "Bad Roof" Tunnel

The development of an important new source of metallurgical and coking coal was contingent on rail penetration of an almost inaccessible mountain valley.

To reach the 140 million ton bituminous seam in rugged Dickenson County, Virginia, the Norfolk and Western Railway laid a 6.3 mile extension to its Wilder spur. The railway penetrates Sandy Ridge Mountain 800 feet below its 2,730 foot summit with an 8,240 foot tunnel...one of the longest in the East.

Test borings, core-drilled from the top of the mountain to some 17-20 feet below the proposed tunnel floor forewarned of the "bad roof" conditions to be encountered in both headings. Varying thicknesses of unstable gray sandstones, shale, and coal would require tunnel supports designed for quick setting after each mucking operation.

Working closely with COMMERCIAL engineers, Norfolk and Western designers specified 8" steel H-beam tunnel arch ribs, bent to proper contour and set on steel posts for the 20-foot by 27-foot bore.

Here's where COMMERCIAL's 30 year "know-how" paid extra dividends in safety and speed of job completion. Almost as soon as both headings were started, thin laminated sandstone and coal seams appeared following the roof line for almost the entire length of the tunnel. Thanks, however, to COMMERCIAL's accurate fabrication and fast erection design, setting steel progressed rapidly without major mishap to workmen or headings.

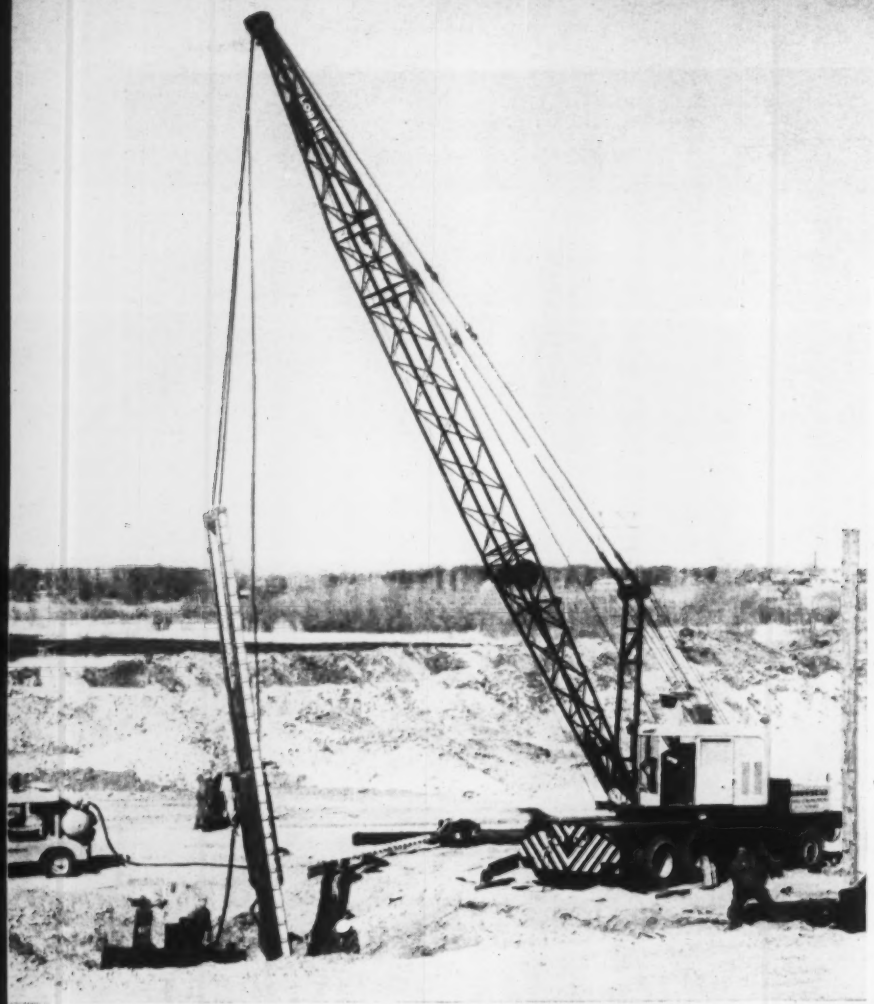
A "jumbo" drilling platform was employed to actually handle the steel. One pneumatic hoist mounted on the forward poopdeck swung side posts into place while another hoist on the rear handled the arch rib segments. The sets were then tied together by 1" steel rods and separated by 4" by 4" timbers.

COMMERCIAL delivered posts and arch ribs keyed to the job progress schedule, thus helping 'round-the-clock crews drive the face at an average weekly rate of 250 feet including steel setting...progress that was also important to a new local 450,000 kw powerplant dependent on the valley mines for fuel.

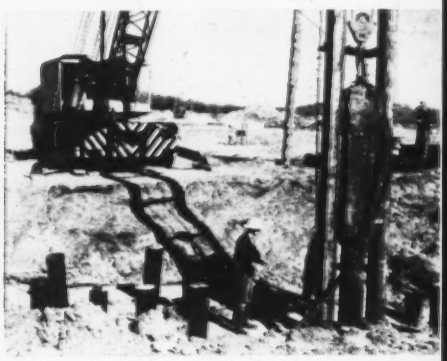
When you design your next vertical shaft or sub-surface tunnel, COMMERCIAL engineers will be glad to offer assistance based on 30 years specialization in ground and rock support systems. There is no obligation, and their recommendations often result in more workable and economical solutions to specific problems.

For complete information, just write to Commercial Shearing & Stamping Co., Dept. E-30, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping



◀ **Arrowhead Engineers and Constructors, Inc.** of Duluth, use their 35-ton Lorain MC-530W Moto-Crane to drive 50,000 feet of pilings, pour concrete, and handle forms on a 532-foot bridge job near Little Canada, Minn.



▲ **Quick leveling on uneven ground.** Each outrigger is independently controlled. Crane can be leveled easily. Eliminates uphill swinging with attendant clutch wear, hazardous side loadings on boom.

▲ **40-second move-ups.** It takes only 20 seconds to retract all four outriggers to travel position with 8" clearance; another 20 seconds to reset and go to work. And you never have to leave the machine.

Minimum clearance for travel. Outriggers retract completely. Pivoted floats fold snugly against the ends of the outrigger boxes. No floats to manhandle. Outriggers are ready to set immediately on arrival at job. ▼

LORAIN POWER-SET* OUTRIGGERS "REMOVE ALL THE HEADACHES" ON BRIDGE JOB

"We make more moves with our Moto-Crane on this bridge job—and they are always in a hurry," reports Lytle Brown, General Superintendent of Arrowhead Engineers and Constructors, Inc.

"Our Lorain Power-Set Outriggers save us time and money . . . remove all the headaches from setting up for the job.

"Just the other day we moved to a side hill spot, kicked out our Power-Set Outriggers, made a lift, and were done in 10 minutes. With regular outriggers it would have taken 40 minutes alone for a dozer to level off a spot so we could set them."

Set up in 56 seconds. Four independently controlled, hydraulically powered, curved beams move out and down simultaneously. Then two wedge locks automatically secure beams. Brown sums it up: "We don't need different size blocking, or require a couple of men to pull out the beams."

For details, see your Lorain distributor or write for booklet.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

*Patented

LORAIN®
ON THE MOVE

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 28 Massachusetts July 29 Rhode Island
August 3 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ **F. H. McGraw & Co.**, 780 Windsor St., Hartford, Conn., CA $2,400,000, 70 mi. 12 in. petroleum pipe line, pump and control stations between New Haven, Conn. and Ludlow, Mass., incl. welded steel pipe 400 lb. pressure, New Haven, Conn. and Springfield, Mass., etc., CONNECTICUT and MASSACHUSETTS. Connecticut-Massachusetts Pipe Lines, Inc., 780 Windsor St., Hartford, Conn. Awarded July 7. CD 8/26/57.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford,
Angelo Tomasso, Inc., Warren St., New Britain, Conn., CA $3,641,157, hot. b. conc. 20,301 lin. ft. on relocation Rte. 2, incl. truck climbing lanes, etc. and 5 composite rolled beam bridges and rein.-con. box culverts, Proj. 70-66 Bozrah, Lebanon and Norwich. Bids June 15. CD 6/17, under "LB."

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford, Bids opened 7/13,
Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn., LB $4,134,355, (18 bidders), grading, drainage and c. conc. paving 20,200 lin. ft. on relocation Rte. U. S. 6, incl. 11 bridges from 1,600 ft. east of Railroad in Danbury to 2,750 ft. east of Rte. 25 in Newtown and 2,722 lin. ft. hot b. conc., box culvert, Fed. Aid Proj. I-84-1 (5) 8, Projs. 34-94 and 96-85, Bethel, Danbury, Brookfield and Newton. CD 6/16.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford, Bids opened 7/13,
Savin Brothers, Inc., 522 Cottage Grove Rd., Bloomfield, Conn., LB $4,344,972 (13 bidders), 1,086 lin. ft. c. conc. pavement, viaducts, Morgan St. and Morgan St. Interchange, 2,098 lin. ft. c. conc. pavement, viaducts, on Hartford-Springfield Expressway, Fed. Aid Projs. I-84-3-(2) 62 and 1-91-3 (23), 38, Projs. 68-133 and 63-116, Hartford. CD 7/13.

BUILDINGS—LB & CA

▲ **Litchfield County Homes, Inc.**, 187 Church St., Torrington, Conn., Owner Builds, $3,740,000, 374 HOUSES, "Field Crest Estates" Cow Hill, OLD MYSTIC, CONN.

▲ **Green Manor Constr. Co., Inc.**, 382 West Middle Turnpike, Manchester, Conn., LB $2,410,445 (12 bidders) North DORMITORIES, Proj. BI-D 211A, STORRS, CONN. State P. Wks. Comr., 165 Capitol Ave, Hartford, Conn. Bids July 15. CD 6/23.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 29 New Jersey
STREETS AND ROADS
July 28 Maryland July 29 Delaware, New Jersey

▲ **New York and New Jersey**—BA 8/18—Port of New York Authority, 111 Eighth Ave., New York 11, N. Y., approach roadway sys. for lower level expansion of George Washington Bridge between Fletcher and Lemoine Aves., Fort Lee Boro, New Jersey. Contr. GWB-190.025. Plans deposit $100. CD 8/15/57.

BUILDINGS—BA

▲ **N. J., New Brunswick**—BIOLOGY—BA 7/28—Rutgers University, College Ave., general work and heating biology bldg. approx. $2,500,000. Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, Mass., archts. Bids June 9 rejected. CD 6/15, under LB.

▲ **N. Y., New York**—NURSES' RESIDENCE, etc.—BA 8/12—Dpt. P. Wks., Municipal Bldg., Zone 7, general contract, plumbing work, heating, ventilating and air conditioning work, electrical work and lighting fixtures, nurses residence and training school, at Metropolitan Hospital, 1st Ave. and E. 97th St., Manhattan Boro. $3,870,129. Plans deposit $60. CD 5/19.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—**Chemung Contracting Corp.**, 105 E. Chemung Pl., Elmira, N. Y., CA $1,719,462, est. $2,139,000, b. conc. 8.37 mi. misc. work 0.02 mi., 1 WF comp. beam bridge, 2 span, 129 ft. 1 rein.-con. twin box bridge, 24 span wid'n. 3 existing rein.-con. span; wid'n. existing 36 ft. span I beam bridge, rehabilitate existing 85 ft. span plate girder bridge, Newark Valley-Berkshire Pt. 1, SH 1007, Newark Valley-Berkshire Pt. 2, SH 1076, Richford Hartford Mills, SH 1452, Rte. 38, Contr. FARC 50-55 Proj. F-894 (5) and F-427 (10), Tioga Co.;

N. Y.—**The Lane Constr. Corp.**, 965 E. Main St., Meriden, Conn., CA $4,298,344, est. $6,069,000, b. conc. 4.11 mi. misc. work 0.58 mi. rein.-con. box bridge, 2 span 30 ft., 1 WF comp. beam bridge 9 separation, 575.8 ft. 2 hy. separation, WF comp. beams, 4 spans 168.6 ft. and 4 span 168.6 ft., 1 railroad separation comp. steel girder, 3 span 250 ft. Painted Post-West City line of Corning Pt. 1 Painted Post-West City line of Corning Pt. 2, FASH 57-11, Corning Rte. 15 and 17, FASH 59-0, FASH 59-11P, FARC 59-56 Proj. U-UG-225(14) and U 593(10), Steuben Co. Bids June 4, awarded July 1. CD 6/5, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg. Bids opened 7/16,
N. Y.—**H. L. Baugham Inc.**, 1240 Jefferson Rd., Rochester 23, N. Y. LB $2,742,760.40, est. $3,256,000, (10 bidders), 9 in. c. conc. pavement var. wide 1.88 mi. b. conc. pavt. Type 2A 2.12 mi. 4 hy. seps. comp. W-F beams 3 sp. 167.5 ft. 3 sp. 150.5 ft. 4 sp. 193.4 ft. and 4 sp. 239.9 ft. rein.-con. arch. br. 1 sp. 26.7 ft. Rochester City Outer Loop East Ave. Inton Rd. N. Pt. 21 Rochester Outer Pllo; East Ave.-Winton Rd. N. Pt. 2 (Blossom Rd. to Winton Rd. N) FAC 59-8 FASH 59-14 Proj. U-1097-(5) Monroe Co.

N. Y.—**WITHDRAWN**—Est. $4,964,000 9 in. c. conc. pavement var. wide 0.94 mi. b. conc. Type 1A and Type 2A on Interchange 4 hy. seps. comp. I-beams, 4 sp. 321.5 ft. 3 span 143.5 ft. 4 sp. 182 ft. and 1 sp. 62 ft. 1 hy. sep. compl. deck girder s. sp. 234.4 ft. 2 br. seps. com. I-beams 4 sp. 381.5 ft. and 3 sp. 135 ft. 2 RR seps thru plate girders 4 sp. 352.7 ft. and 1 sp. 57 ft. interstate Rte. Conn., 580 Rochester City Estersn Expressway Pt. 1, East City Line Interchange and City of Rochester; outer loop art. hy. (Highland Ave. to Int. Rte. 580) Rte. 490 FIC 59-6 FAC 59-9 Proj. I-1107(11) and U-1093(4) Monroe Co. CD 6/12.

▲ **Dpt. P. Wks., Nassau Co.**, Old County Court House, Mineola, N. Y., rejected bids June 16, 50 mi. sewers and 480 house connections in Lakeview and West Hempstead, Collection District No. 2, MINEOLA, N. Y. LB $3,933,895. CD 6/18, under LB.

BUILDINGS—LB & CA

▲ **David Wolfenson**, c/o S. J. Kessler & Sons, archts., 551 Fifth Ave., New York 17, N. Y., Owner Builds, $4,000,000, two 16 story APARTMENTS, incl. 500 units, Flatbush Ave. and Lincoln Rd., BROOKLYN, N. Y. CD 1/8.

▲ **Paul J. Roche, Inc.**, 1003 E. Merrick Rd., Baldwin, N. Y., LB $3,135,000, Farmingdale SENIOR HIGH SCHOOL, Intervale Ave. and Lincoln St., FARMINGDALE, N. Y. Union Free School Dist. No. 22, Weldon E. Howitt High School, Farmingdale, N. Y.

▲ **Seidman & Soling**, 147 E. 50th St., New York 22, N. Y., Owner Builds, $2,600,000, 19 story APARTMENT, 245-53 East 51st St., and 963-71 Second Ave., NEW YORK, N. Y. Boak & Raad, 175 Fifth Ave., New York 10, N. Y., archts. CD 4/14.

▲ **Perini Corp.**, 73 Montwait Ave., Framingham, Mass., CA $3,693,000, general contract Midtown UNDERGROUND GARAGE, ROCHESTER, N. Y. Purchasing Agent, Rm. 36, City Hall, No. 20 South Fitzhugh St., Rochester, N. Y. Bids June 22. CD 6/26, under LB.

▲ **Eugene Miltenberger, Jr.**, 56 Laurel Dr., Fairhaven, N. J., Owner Builds, $2,500,000, 50 HOUSES, Hartshorne Park, Middletown Twp., NAVESINK, N. J. Jos. Hilton, 28 Oak Crest Rd., West Orange, N. J., archt.

▲ **Sampson Bros.**, 610 Garden City Dr., Monroeville, Pa., Owner Builds, $10,000,000, RESIDENTIAL COMMUNITY, incl. 500 homes, sewerage sys., swimming pools, churches, shopping center, NORTH FAYETTE TWP., PA. Herman H. York, 90-04 161st St., Jamaica, N. Y., archt. Community Planning Services, Inc., 607 Garden City Dr., Monroeville, Pa., engrs.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	Mississippi to Rockies
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 28 West Virginia
STREETS AND ROADS
July 28 West Virginia

BUILDINGS—BA

▲ **Ga., Athens**—DORMITORIES—BA 8/25—University of Georgia Building Auth., 244 Washington St. S.W., Atlanta, 6 dormitories, University of Georgia, $2,500,000. Plans deposit $50. Logan & Williams, Palmer Bldg., Atlanta, archts. CD 12/23.

HEAVY CONSTRUCTION—LB & CA

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort, Bids opened 7/10,
Ky.—**Ralph Myers Contr. Corp.**, Box 230, Salem, Ind., LB $2,891,743 (15 bidders), high type surf. Interstate, 5.225 mi. I-75-7(11) 251 F 174 (13) S-301 (4) Grant Co.;
Ky.—**Stephens-Jeffrey & Co.**, Tompkinsville, Ky., LB $140,377 (3 bidders), b. conc. Class I 0.479 mi. Glasgow-Tompkinsville, Monroe Co. CD 6/24.

BUILDINGS—LB & CA

▲ **S. M. Bradsher, Inc.**, 1019 W. Trinity Ave., Durham, N. C., CA Est. $3,000,000, SHOPPING CENTER, DURHAM, N. C. Durham Shopping Center, Inc., 3907 Reade Rd., Durham, N. C.

▲ **Abco Builders Co., Inc.**, 90 Rogers Ave. N.E., Atlanta, Ga., LB $2,872,000, ELECTRICAL ENGINEERING BLDG., Georgia School of Technology, ATLANTA, GA. University System of Georgia, Building Auth., 244 Washington St. S.W., Atlanta, Ga. Bids July 7. CD 5/28.

▲ **Thompson & Street Co.**, 2622 Piedmont Rd. N. E. Atlanta 5, Ga., CA $4,538,230, Florida State PRISON, RAIFORD, FLA. Bd. Comrs. State Institutions, Tallahassee, Fla. Bids June 30, awarded July 10. CD 7/7, under LB.

▲ **H. K. Ferguson**, 1783 E. 11th St., Cleveland, O., CA $28,000,000, PLANT, West Baton Rouge, BATON ROUGE, LA. Noralyn Paper Mills, Fidelity National Bank Bldg., Baton Rouge, La. CD 7/16.

▲ **McDonough Constr. Co. of Georgia**, 1958 Monroe Dr. N. E., Atlanta, Ga., CA $2,956,032, 320 low rent HOUSING units, MEMPHIS, TENN. Memphis Housing Auth., 700 Adams St., Memphis, Tenn. CD 6/2, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 28 Indiana
STREETS AND ROADS
August 4 Ohio

▲ **O., Batavia**—BA 7/27—Comrs. Clermont Co., Sections C thru E, 68 mi. water lines; Section F, pump house, Section G, treatment plant, pump station, Section H, booster stations, Section J, elevated tanks, Section K, administration bldg. $3,100,000. Plans deposit $30 each Sections C, D, E, $15 each Sections

WHERE IN THE WORLD DO YOU NEED CONSTRUCTION?

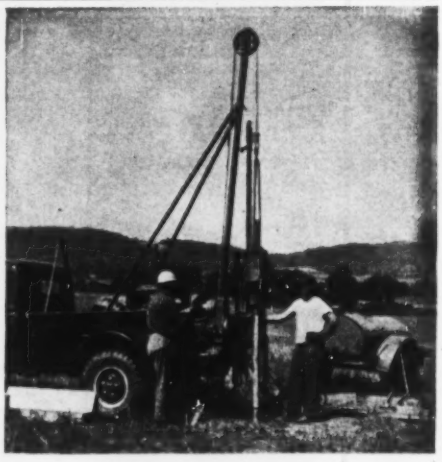
WILLIAMS BROTHERS

New York — Washington
Pittsburgh — Louisville
Minneapolis — Caracas — Bogota
La Paz — Edmonton — Calgary
London — Ankara — Tehran

ENGINEERS and CONSTRUCTORS

NBT BLDG. • TULSA, OKLAHOMA • CABLE-WILLBRO

DEPENDABLE SOIL SAMPLING EQUIPMENT IS NO PROBLEM FOR THIS DRILL CREW



With a contract to obtain representative samples of the soil strata along the center line of an important link on the new Interstate Highway System, this contractor is using the S&H Split Barrel Sampler for recovering samples in this immediate area. At the next location, sampling for a bridge foundation, the S&H Shelby Tube Sampler will be utilized to recover the undisturbed samples that are necessary.

Sprague & Henwood's sampling equipment is designed for long, dependable service with a resulting minimum cost. The complete line of sampling devices and equipment is described in the new Bulletin 300.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.
MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.
New York — Philadelphia — Atlanta — Pittsburgh — Grand Junction, Colo. — Buchans, N.F.

F, H, J, K, $35 Section G, Steinkamp & Nordloch, Water St., Milford, archts. Jack H. Fuller, 202 Wooster Park, Milford, engr. CD 7/10.

BUILDINGS—SLC

▲ **Ill., Chicago**—APARTMENT—Cosmopolitan National Bank (tr.), 810 N. Clark St., soon lets contract 27 story, 161 x 170 ft., brick, concrete block apartment, 1555 N. Dearborn St. $10,000,000. Milton M. Schwartz, 2709 W. Roosevelt Rd., archt.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Dpt. Hys., State Dpt. Bldg., Columbus, Bids opened 6/30,

O.—**The Horvitz Co.**, 4375 E. 146th St., Cleveland, O., LB **$3,712,640**, est. $4,396,600 (7 bidders), Type T-71 and structures 3.984 mi. Cities of Willoughby and Eastlake, SR 2-4.42 F-U-UG-329 (15), Proj. 256 Lake Co.;

O.—**C. F. Replogle Co.**, P. O. Box 308, Circleville, O., LB **$3,291,858**, est. $3,649,600 (3 bidders), Type T-71 and structures 2.448 mi. USR 52-5.99, U-UF-UG-393 (6) U-F-421 (8), City of Ironton. Proj. 247, Lawrence Co.;

O.—**National Engineering & Contracting Co. and Great Lakes Constr. Co.**, 1968 W. Third St., Cleveland, O., LB **$1,144,589**, est. $1,331,000 (11 bidders), Type T-71 and structure 0.485 mi. SR 57-18.02, U-602 (15) City of Elyria. Proj. 248, Lorain Co.;

O.—**John G. Ruhlin Constr. Co.**, 1024 Home Ave., Akron, O., LB **$1,652,563**, est. $1,806,000 (11 bidders), Type T-71 and structures 1.766 mi. SR 93-9.13 US-USG-698(4), City of Akron, Proj. 252, Summit Co.;

O.—**The DeSalvo Constr. Co.**, 3701 Red Bank Rd., Cincinnati, O., LB **$1,113,000**, est. $1,180,400 (5 bidders), Type T-35 on B-219 and structures 4.935 mi. USR 127-2-57 (Village of Camden), Proj. 281, Preble Co. CD 6/19.

▲ **Malan Constr. Corp.**, 2 Park Ave., New York, N. Y. LB **$5,387,000**, American Airlines maintenance facilities, O'Hare International Airport. Spec. 80.85-59-27, CHICAGO, ILL. Dpt. Purchase, City Hall, Chicago 2, Ill. Bids July 15. CD 6/17.

▲† **U. S. Eng.**, 475 Merchandise Mart, Chicago 54, Ill., rejected bids June 11, BOMARC FACILITIES, incl. 7 or 8 bldgs., Truax Field, MADISON, WIS. LB **$2,748,111**. Project abandoned. CD 6/16, under LB.

BUILDINGS—LB & CA

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd., S.W., Cleveland, O., Owner Builds, **$3,750,000** 138 brick frame HOMES, Cherokee Ranchlands, W. 130th St. between Bagley and Sprague Rds. MIDDLEBURG HEIGHTS, O.

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd. S.W., Cleveland, O., Owner Builds, **$2,250,000**, 94 frame, brick HOMES, Stroud Estates, Brookmere, Nelwood, Springwood and Alderwood Rds., PARMA HEIGHTS, O.

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd. S.W., Cleveland, O., Owner Builds, **$3,000,000**, 170 frame HOMES, Prospect Rd. between Sprague and Albion Rds., STRONGVILLE, O.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa., CA Est. **$5,000,000**, rebuilding Blast Furnace B on existing fdn., GRANITE CITY, ILL. Granite City Steel Co., Hamilton and Randolph Sts., Granite City, Ill.

▲ **Hollywood Builders**, 3454 Devon, Lincolnwood, Ill. Own Forces, **$3,000,000**, five APARTMENTS, swimming pool, Old Orchard Rd., SKOKIE, ILL. Robert Serota, 2533 W. Davidson, Detroit, Mich., archt.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 28 Iowa, Kansas July 31 North Dakota
August 6 Kansas
STREETS AND ROADS
July 28 Iowa, Kansas July 31 North Dakota
August 6 Kansas

▲† **Kansas**—BA 7/30—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., relocation Missouri Pacific R.R., Tuttle Creek Dam and Reservoir and Big Blue River area near Manhattan, CIVENG-23-028-59-121. Over $3,000,000. CD 6/17.

▲† **Arkansas**—BA 8/18—U. S. Eng., P.O. Box 867, Little Rock, 3,173,100 cu. yd. excav., 2,784,000 cu. yd. earthfill, 150,000 cu. yd. drainage blanket fill, 73,000 cu. yd. dumped riprap, etc., White River Watershed, Greers Ferry Dam, Little Red River, Cleburne Co., approx. 3 mi. southwest of Heber Springs, CIVENG-03-505-60-3.

HEAVY CONSTRUCTION—LB & CA

▲† **Blaw-Knox Co.**, 829 Beaver Ave., Pittsburgh, Pa., CA **$6,938,450**, est. $9,187,300, Missile Complexes D, E, F, G, H & I, near Forbes Air Force Base, ENG-23-028-59-72, TOPEKA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids June 26. CD 7/1, under LB.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.**, Baker Bldg., Minn. and **Sheehy Constr. Co.**, 1255 W. Larpenteur Ave., St. Paul, Minn., CA Total **$5,000,000**, OFFICE, Washington and Fifth Sts., ST. PAUL, MINN. St. Paul Fire & Marine Insurance Co., Inc., 111 West Fifth St., St. Paul, Minn. Bids June 30. CD 6/9.

▲ **W. S. Bellows Constr. Co.**, P. O. Box 2132, Houston 1, Tex. and **Childs Constr. Co.**, 2716 East Lan-

caster St., Fort Worth, Tex., CA Over $10,000,000. 18 story, masonry BANK AND OFFICE, FORT WORTH, TEX. First National Bank, 711 Houston St., Fort Worth, Tex. Bids July 10. CD 6/15.

▲ Fluor Corp., Ltd., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., CA design and construct 8,000 bbl. per day fresh feed THERMOFOR CATALYTIC CRACKING UNIT to be installed Shamrock's McKee Refinery in Texas Panhandle, SUNRAY, TEX. Shamrock Oil & Gas Corp., 1st National Bank Bldg., Amarillo, Tex.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 12 California
STREETS AND ROADS
August 12, 19 California

▲ California—WEBSTER STREET TUBE—BA 9/10—State Div. Hys., 1120 N. St., Sacramento, 3,350 ft. long, Webster Street Tube under Oakland Estuary between Oakland and Alameda to provide two lane roadway parallel to present Posey Tube consisting of 12 tube sections each 200 ft. long and 37 ft. diam., connected at depth of 90 ft. $20,000,000. CD 2/9/54.

BUILDINGS—BA

▲ Wash., Seattle—RETIREMENT HOME—BA 7/30—Seattle First Methodist Home, 1306 2 Ave., Zone 4, 9 story retirement home. $3,500,000. John Graham & Co., 1426 5 Ave., Zone 1, archts. CD 3/4.

BUILDINGS—SLC

▲ Calif., Corte Madera—DEPARTMENT STORE—Corte Madera Shopping Center, c/o John S. Bolles, archt., 14 Gold St., San Francisco, soon lets contract 75,000 sq. ft. department store. $4,000,000. Montgomery Ward & Co., lessee. CD 4/29.

▲ Calif., San Francisco—HEADQUARTERS, etc.—American President Lines, c/o Anshen & Allen, archts., 461 Bush St., soon lets contract 21 story penthouse, rooftop steel frame, precast concrete spandrels, terra cotta or mosaic exterior facing headquarters, Kearny and California Sts. $7,000,000. CD 6/25.

HEAVY CONSTRUCTION—LB & CA

▲ UTAH—State Rd. Comn., State Capitol, Salt Lake City. Bids opened 7/7.
W. W. Clyde, 227 W. 6th S., Salt Lake City, Utah, LB $2,558,284, graded, drained roadway, one 26.17 ft. double box culvert from 18th S. St. to 45th 3.96 mi. Proj. I-15-7(14) 302 and I-15-7(15) 300, Salt Lake Co. CD 6/24.

▲ C. M. Corkum Co., 2630 S. W. 2nd Ave., Portland, Ore., CA $2,249,400, concrete, timber wharfs, Pier 4, Terminal 4, PORTLAND, ORE. City Dock Comn., 3070 N. W. Front Ave., Portland, Ore. Bids July 2. Awarded July 7. CD 7/8, under LB.

BUILDINGS—LB & CA

▲ H. K. Schroeder Constr. Co., 11204 Roosevelt Way, Seattle, Wash., CA Est. $2,800,000, 4 story MOTEL, swimming pool, SEATTLE, WASH. Inntown Motel, Inc., c/o contractor.

▲ Barrett Constr. Co., 1800 Evans Ave., San Francisco, Calif., LB Est. $3,000,000, 4 levels 60x350 ft. cross shaped bldg., Spanish tile roof, 100 ft. bell tower, Mt. Alverno NOVITIATE and RETREAT HOUSE, Farm Hills, REDWOOD CITY, CALIF. Sisters of St. Francis of Penance & Christian Charity, 250 Oak Grove Ave., Menlo Park, Calif. Bids July 10. CD 7/7.

▲ Rothschild-Raffin & Weirick, 875 Sansome St., San Francisco, Calif., LB $3,214,000 (9 bidders), 1 and partial 2 story, 165,000 sq. ft., rein.-con. HIGH SCHOOL, Hillsborough, SAN MATEO, CALIF. San Mateo Union High School Dist., 650 N. Delaware St., San Mateo, Calif. Bids July 9. CD 6/9.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 29, August 12 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria, Bids opened 6/26.
Perini Pacific Ltd., 475 Howe St., Vancouver, B. C., LB $7,295,584, total est. $20,000,000, fdns. and substructure for Port Mann Bridge, two main supporting piers, two anchor piers, 28 approach bents which support girders, Port Mann. CD 5/6.

BUILDINGS—LB & CA

▲ E. G. M. Cape & Co. (1956) Ltd., 79 Scollard St., Toronto, Ont., CA Est. $5,000,000, (11 bidders), 4-Bldg. HOSPITAL ADDN., 10 story, T-shaped, 40 x 50 ft. nurses residence, 6 story, 54 x 82 ft. internes residence, 10 story, 80 x 128 ft. main pavilion addn., 2 story, bsmt., 60 x 200 ft. Bathurst Bldg. addn., TORONTO, ONT. Toronto Western Hospital, 391 Bathurst St., Toronto, Ont. Bids June 15, awarded July 9. CD 5/18.

▲ Pigott Constr. Co. Ltd., 1510 Drummond St., Montreal, Que., CA Est. $5,000,000, 14 story, steel frame sheathed in limestone and stainless steel

It's Smooth Driving...

WHEREVER **PILING**

HAS BEEN DRIVEN BY C. L. GUILD

It's smooth driving when C. L. Guild Construction Company handles your piling problems for you. Trained by years of experience on both large and small jobs, all over the U.S.A., Guild engineers and construction teams are experts in meeting and solving any type of pile driving difficulties. And —Guild experts know how to keep ahead of schedules. Call Guild now—Let Guild experience help *you*.

Smooth driving is the word for it on the new North-South Arterial Route, Utica, New York. General contractor was D. W. Winkelman Co., Inc., Syracuse, N. Y., for whom Guild drove 97,670 LF of Cobi cast-in-place piles.

Specialists in the use of Cobi Piles

C. L. GUILD CONSTRUCTION CO., INC.
90 Water Street, East Providence 14, R. I.
BOSTON, MASS. WASHINGTON, D. C. HOUSTON, TEXAS
SYRACUSE, N. Y. ATLANTA, GA. KANSAS CITY, MO.

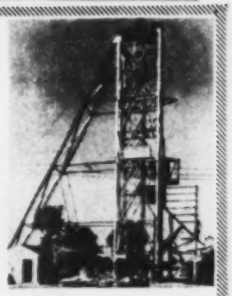
ELGOOD
Hydraulic & Mechanical
JACKS
Capacities to 600 Tons—48" Travel

Jacking Equipment for Pipe Pushing Erection Pile Driving Pile Testing Slip Forms Tunnel Shields Prestressed Concrete

RENTALS — SALES — DESIGN
Large Stock Immediate Delivery
Write for Job Fact Sheets
ELGOOD EQUIPMENT CORP.
373 Ten Eyck St. Brooklyn N Y
HY 7-5445

ALL-STEEL HEAD FRAMES

Designed right for the job. Depend on Mayo methods and skill, based on over 25 years experience . . . world-wide. Send for Bulletin NO. 20-A



MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

REDA SUPPLIES 21,000 GALLONS OF WATER PER HOUR

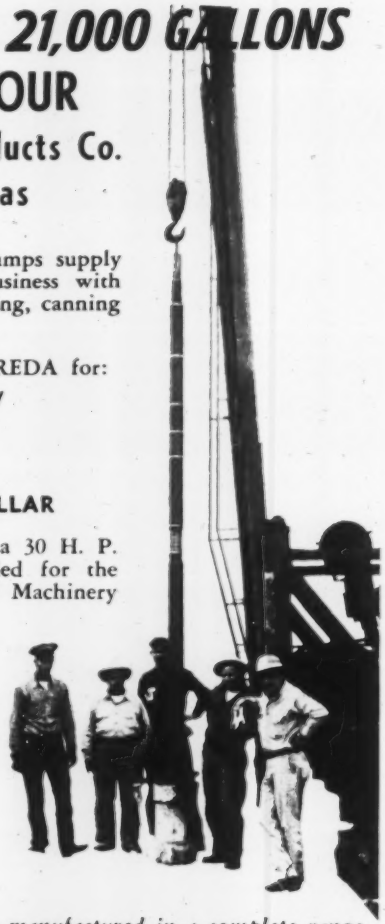
for Kimbell Food Products Co. Fort Worth, Texas

Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.



INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

Reda Submergible Pumps are manufactured in a complete range of sizes from ⅓ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY
BARTLESVILLE, OKLAHOMA
Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

BEFORE YOU START THAT WET JOB
Ask How You Can Save

MORETRENCH WELLPOINT SYSTEM
Guarantees Dry Digging

Send for Catalog
MORETRENCH CORPORATION
World's Oldest, Largest and Most Experienced Predrainage Organization
Main Office & Plant: **Rockaway, N. J.**
Chicago, Ill., Tampa, Fla., Houston, Tex., Hackensack, N. J.

OFFICE, St. James and McGill Sts., MONTREAL, QUE. The Toronto-Dominion Bank, 55 King St. W., Toronto, Ont. Awarded July 9. CD 5/27.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Raymond International, Inc.**, 140 Cedar St., New York, N. Y., U. S. A.
(Combination) **Utah Constr. Co.**, 144 E. Broadway, Salt Lake City, Utah, U. S. A., **Morrison-Knudsen Co., Inc.**, 319 Broadway Ave., Boise, Idaho, U. S. A., **Brown & Root, Inc.**, 410 Clinton Dr., Houston, Tex., U. S. A.
(Combination) **H. J. Kaiser Co.**, 1942 Broadway, Oakland, Calif., U. S. A., **Macco Corp.**, 14409 Paramount St., Paramount, Calif., U. S. A.
three lowest bidders on port facilities GUAYAQUIL, ECUADOR, Est. $15,000,000. Autoridad Portuaria de Guayaquil, Guayaquil, Ecuador. (Correction—Low bidder 6/25/59).

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Pa., Duquesne**—Duquesne Sanitary Auth., sewage disposal plant, $2,000,000. Alexander Potter & Assocs., 50 Church St., New York, N. Y., consult. engrs. CD 1/15/52.

STREETS AND ROADS

▲ **Calif., Los Altos**—City, City Hall, $1,300,000 bond election Oct. 6, storm drainage. CD 5/23/56.

AIRPORTS

▲ **Minn., Minneapolis**—AIRPORT TERMINAL LOADING PIERS—Minneapolis-St. Paul Metropolitan Airport Comn., 2429 University Ave., St. Paul, plans by Thorshov & Cerny, Inc., 400 Metropolitan Bldg., airport terminal loading piers, connected with main terminal incl. 2 bldgs. each 85 ft. wide and one 600 ft. long, other 750 ft. long, Wold-Chamberlain Field, $2,200,000. Bids in October. CD 6/17/55.

PUBLIC BUILDINGS

▲ **Calif., Sacramento** — SCHOOLS — Sacramento City Unified School Dist., 1619 N. St., bond election Nov. 3, school constr. $25,500,000. CD 2/18/55.

▲ **Ill., Libertyville**—SCHOOL—Libertyville-Fremont Consolidated High School, Park Ave., plans by Berger Kelley, Unteed & Assocs., 44 Main St., Champaign, Butler Lake addns., remodeling Brainerd High School, $3,200,000. Bids in early Fall. (Correction—architects address). CD 6/25.

▲ **Ind., Anderson**—HOSPITAL—Anderson-Madison County Hospital, 338 W. 8 St., plans by Arthur Henning, 514 Anderson Bank Bldg., 3 story, bsmt., 75,000 sq. ft., brick, store hospital. $2,000,000. Constr. in 1960. Ammerman-Davis & Stout, 912 K of P Bldg., Indianapolis, consult. engrs. CD 3/17.

▲ **N. Y., Brooklyn**—APARTMENT—New York City Housing Auth., 299 Broadway, New York, Zone 7, plans by Eggers & Higgins, 100 E. 42nd St., New York, Zone 17, Jonathan Williams Houses-Proj. NYS-101, 575 apartments S. 9th St., Division Ave., Marcy Ave. and Roebling St. $10,855,000. CD 2/24/58.

▲ **N. Y., Mineola**—SCHOOL—Bd. Educ., referendum defeated June 9, Willis Ave., School, conversion from seventh and eight grade to K-6 School; seventh and eight grade school, Sayville Rd. between Bower Pl., Buchanan Ave. and Foch Blvd.; one or two wings high school addn. $3,000,000. CD 4/28.

▲ **N. Y., New York**—APARTMENT—New York City Housing Auth., 299 Broadway, Zone 7, plans by Briggs & Wood, 10 E. 40th St., Zone 7, Chelsea Houses, 420 apartment, West 25th St. and 9th Ave. $8,390,000. CD 2/24/58.

▲ **N. C., Wilson**—HOUSING—Wilson Housing Authority, Wilson, plans by B. A. Skinner, 509 Raleigh Rd., Wilson, and Billy Griffin, Borden Bldg., Goldsboro, 400 housing units, $4,500,000.

▲ **O., Garfield Heights**—SCHOOL—Garfield Heights Bd. Educ., 4900 Turney Rd., bond election Nov. 3, high school $3,000,000.

▲ **O., Mansfield**—SCHOOLS—Bd. Educ., bond election Nov. 3, high school, Junior High School and 2 elementary schools. $6,000,000. Bellmen, Gillett & Richards, 1600 Madison, Toledo, archts. for high and Junior High schools. Thomas Gene Zaug, 1121 Lexington Ave., archt. for elementary schools. CD 7/1.

▲ **O., Oxford**—DORMITORIES, etc.—State of Ohio, Dpt. P. Wks., Columbus, plans by Cellarius & Hilmer, 4th and Main Sts., Cincinnati, Women's Dormitory No. 3 $1,000,000. Bids about July 1; Men's Dining Hall No. 3 $500,000. Bids about July 15; Women's Dormitory No. 8, $950,000. Bids about July 22; Women's Dormitories Nos. 7 and 9, $2,000,000. Bids about Sept. 1; Women's Dining Hall, south addn., $1,450,000. Bids about Oct. 27; Men's Hall No. 6, $1,750,000. Bids about Dec. 1, above work at Miami University. CD 6/18.

▲ **O., Toledo**—SCHOOL—Oregon Local School Dist., 5721 Seaman Rd., plans by Bellmen, Gillett & Richards, 1600 Madison, Junior High School, Starr Ave. near Yarrow Rd. $2,000,000. Bids in August or September.

▲ **Tenn., Knoxville**—RESEARCH—University of Tennessee, engineering and nuclear research bldg. $3,000,000. John L. Neely, University of Tennessee, staff engr.

(Continued on page 68)

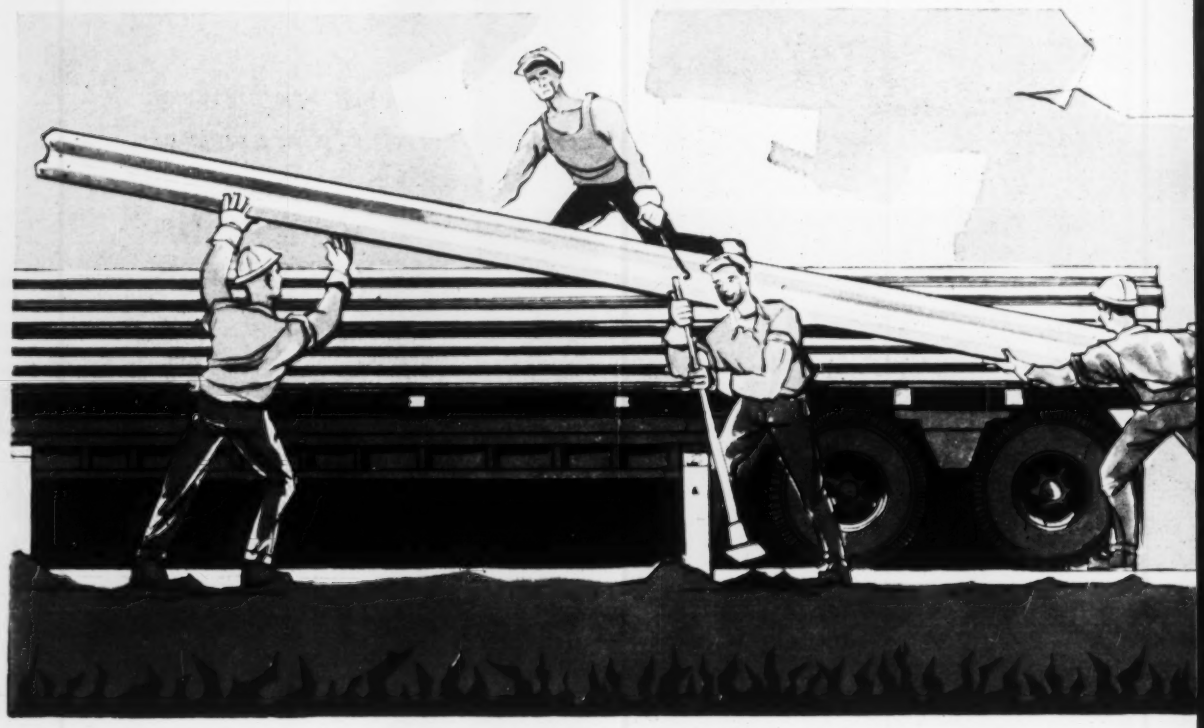
THE NATION'S NO. 1 CONTRACT-AWARDER ...THE MANAGEMENT MAN WHO READS BUSINESS WEEK

The decision to sign a contract is most decidely management's . . . whether you seek it from business, industry or government. But how can you be sure you're sitting in with management, selling management? Simply by asking management men, themselves, which magazine they read best, which one they find most useful. Answer: Business Week. And here you will find the highest concentrated audience of management anywhere . . . in fact, more management readers for your advertising dollar than in any other news or general-business magazine.

YOU ADVERTISE IN BUSINESS WEEK
WHEN YOU WANT TO INFLUENCE MANAGEMENT MEN

A McGraw-Hill Magazine – 330 West 42d St., New York 36, N. Y.

Get Two More PLUS Features



PLUS 1. DOUBLE LENGTHS to
PLUS 2. GALVANIZED to simplify

Now you can gain important new advantages when you specify or install Armco FLEX-BEAM® Guardrail. Galvanized FLEX-BEAM is now available in double lengths—25-foot sections—that speed installation. Five out of every ten splices are eliminated, and there are just half as many sections to haul to the job site and handle. It's ideal for big projects where you can take advantage of production-line construction techniques. Of course the standard, proved-in-service, 12'-6" FLEX-BEAM sections continue to be available.*

Another new extra value feature of FLEX-BEAM is its zinc coating.* With galvanized FLEX-BEAM, painting can be limited to the face of the rail where visibility is important. The back of the rail is protected by the zinc against corrosion. This is a doubly important advantage for median strip railing, where back-to-back installation makes one side of the rail inaccessible for maintenance painting. Total result: Simpler, lower cost installation and maintenance.

GET NEW CATALOG

Send for the latest edition of the 12-page Armco FLEX-BEAM Guardrail catalog. Use the handy coupon. Armco Drainage & Metal Products, Inc., 7499 Curtis Street, Middletown, Ohio.

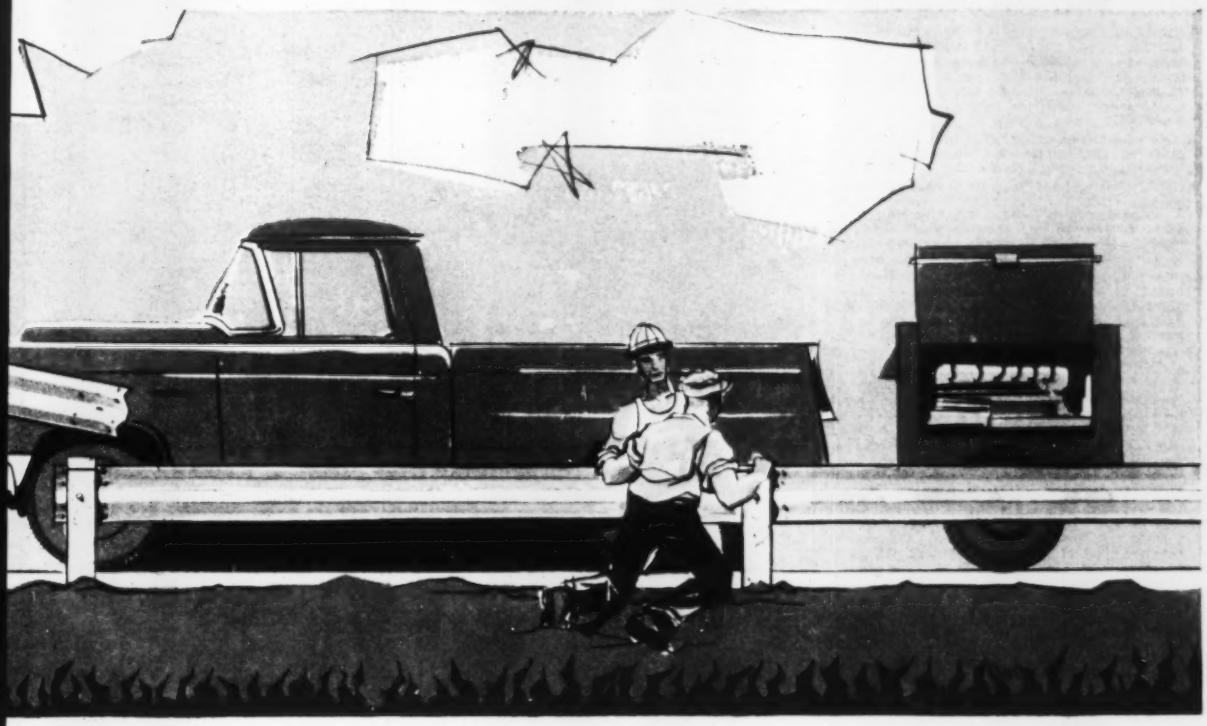
***Condensed Specifications on FLEX-BEAM**

Gage:	12 and 10
Length:	12'-6" and 25'-0" (25' sections supplied in 12-gage, galvanized steel only)
Coating:	Shop applied, rust-inhibiting prime paint or Galvanized to meet ASTM A-93 (Class 2 5 oz. coating).
Shop-Curved Sections:	Fit any radius from 5 to 150'.

ABOVE:
FLEX-BEAM Guardrail protects property and vehicles on Chicago's Calumet Skyway.

FAR RIGHT:
Central Expressway, Dallas, Texas, has median strip protection of galvanized FLEX-BEAM.

with 25-foot Armco Guardrail



speed installation and cut costs painting and reduce maintenance

New steels are born at Armco

Armco Drainage & Metal Products, Inc.
7499 Curtis Street, Middletown, Ohio

Send my copy of the Armco FLEX-BEAM Guardrail catalog

Name_____ Title_____

Organization_____

Address_____

City_____ Zone____ State_____

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

(Continued from page 64)

▲† **Tex., Sherman** — HOUSING — Procurement Office, Sherman Air Force Base, plans by John W. Floore, 1401 W. Lancaster St., Fort Worth, 260 brick veneer Capehart Housing Units, site work, utilities, Perrin Air Force Base. **$4,000,000.** Carter & Burgess, 1100 Macon St., Fort Worth, consult. engrs. CD 7/6.

COMMERCIAL BUILDINGS

▲ **Calif., Palo Alto**—HOME FOR ELDERLY—Presbyterian Church Synod of Calif., 288 McAllister, San Francisco, plans by Skidmore, Owings & Merrill, 1 Montgomery St., San Francisco, 198 unit wood frame, concrete ext. finish, Home for Elderly, incl. swimming pool and rigid steel frame constr. social center bldg. **$3,000,000.**

▲ **Calif., San Mateo**—APARTMENT—Owner c/o W. R. McIlvaine, 1845 Hillview Dr., Menlo Park. 56 unit apartment 4th and El Camino Real. **$2,500,000.**

▲ **Conn., Berlin**—SHOPPING CENTER—David T. Chase, 85 King Philip Dr., West Hartford, plans by Philip J. DiCorcia, 376 W. Middle Tpk., Manchester, 15 stores 200,000 sq. ft. shopping center, Rte. 72, "Webster Square Shopping Center", 2 banks, 60,000 sq. ft. **$2,000,000.** Zayres, Boston, Mass., lessee.

▲ **Conn., New Haven**—MEDICAL CENTER—Edwin V. Larsen, Et Als, 405 Temple St., plans by Caproni Assocs., P. O. Box 1857, medical center, **$2,000,000.** Paul Weidlinger, 101 Park Ave., New York, N. Y., consult. engr. CD 6/10.

▲ **Fla., Miami**—RETIREMENT VILLAGE — Lutheran Senior Citizens Foundation, Inc., Box 506, North Miami, plans by Walter K. Vivrett, University of Minnesota, Minneapolis, Minn., retirement village (East Ridge) SW 87 Ave. old Cutler Rd. and Caribbean Blvd. **$3,500,000.**

▲ **Hawaii, Honolulu**—APARTMENT—Weed, Wallace & Assocs., owners and archts., 1311 Kapiolani Blvd., 15 story apartment and 5 penthouses, **$8,000,000.** Murray Erick Assocs., 5657 Wilshur, Los Angeles, Calif., consult. engrs.

▲ **Ill., Chicago**—APARTMENT—Herman Neiburger, 33 N. LaSalle St., plans by Loewenberg & Loewenberg, 120 S. LaSalle St., 19 story apartment, Wellington Ave. and Sheridan Rd. **$2,500,000.**

▲ **Ill., Chicago**—HOTEL—Owner, c/o Marshall Bennett, 400 W. Madison St., Zone 6, plans by Hausner & Macsai, 104 S. Michigan Ave., Zone 3, and Friedman Alschuler & Sincere, 223 W. Jackson Blvd., joint archts., 3 story, 156 room, rein.-con., brick, glass hotel, restaurant, swimming pool, Toughy and Lincoln Aves., Lincolnwood, **$3,000,000.**

▲ **Ill., Des Plaines**—SHOPPING CENTER—William S. Deree, 919 N. Michigan Ave., Chicago, 260,000 sq. ft. shopping center, 1,700 car parking lot, Oakton and Lee Sts. **$5,000,000.** Camburas, Theodore & Jaye, 105 W. Madison St., Chicago, archts.

▲ **Ill., Park Ridge**—MOTEL—National Realty & Investment Co., Drake Hotel, Chicago, plans by Walton & Walton, 626 Grove Ave., Evanston, motel, Higgins Rd. and Cumberland Ave. **$2,200,000.**

▲ **Ind., Gary** — MOTEL — Trans-American Constr. Co., 5252 Sheridan Rd., Chicago, Ill., 150 units motel, 6200 Melton Rd. **$3,000,000.**

▲ **Mass., Chicopee**—HOTEL—Schine Hotels, 455 Park Ave., New York, N. Y., suburban hotel, Chicopee Industrial Center. **$2,500,000.**

▲ **Mass., Roxbury**—HOSPITAL WING, etc.—Peter Bent Brigham Hospital, 721 Huntington Ave., wing for private patients and conversion E & F Bldgs. into laboratory space. **$2,000,000.** Constr. 1959.

▲ **Mass., Yarmouth**—HOTEL-MARINA, etc.—Owner, c/o Henneberg & Henneberg, archts., 42 Mount Auburn St., Cambridge, 7 story hotel-marina, yacht club, dry dock and parking area, summer theatre, boat repair shop, cabanas, Bass River, off South St. **$2,000,000.**

▲ **Minn., Edina (P. O. Minneapolis)**—HOSPITAL—Fairview Hospital, 23rd Ave. S. and Sixth St., Minneapolis, hospital in Southdale Shopping Center. **$5,000,000.**

▲ **Miss., Meridian**—HOSPITAL—Mississippi Catholic Hospital, 123 N. West St., Jackson, 200-bed hospital, approx. **$2,000,000.**

▲ **N. J., Clifton**—APARTMENT—Krugman & De Petri, 1330 Main Ave., plans by Max Roche, P. O. Box 342, 12 story, 214-unit apartment, Broad St. **$2,000,000.**

▲ **N. Y., New York**—APARTMENT—89th Street Assocs., Inc., 151 E. 17th St., Zone 3, plans by Philip Birnbaum, 12 East 48th St., Zone 17, 18 story apartment, 401-7 East 89th St. **$2,000,000.**

▲ **N. Y., New York**—HOSPITAL—Memorial Center for Cancer & Allied Diseases, 444 E. 68th St., Zone 21, plans by Harrison & Abramovitz, 630 Fifth Ave., Zone 20, 19 story hospital, 425-35 East 66th St. and 1231-41 York Ave. for Memorial Center. **$3,400,000.**

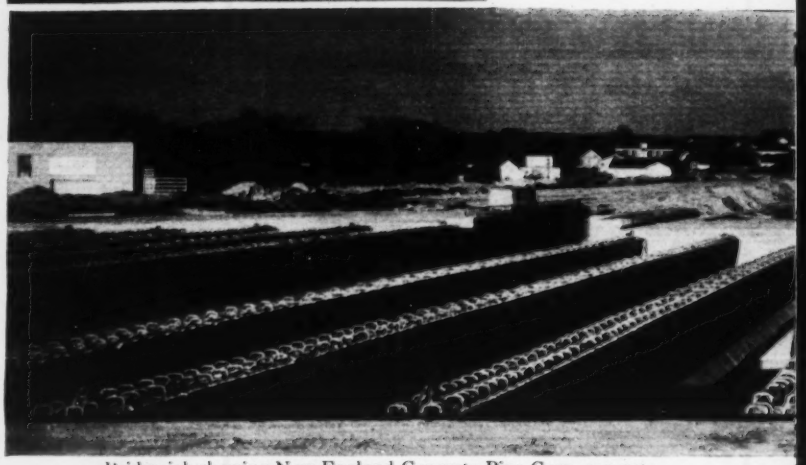
▲ **O., Cincinnati**—STORES—Rollman & Sons Co., 5th St., alterations stores. **$3,000,000.**

▲ **O., Kettering**—HOSPITAL—Montgomery Co. Foundation for Research & Education, 131 N. Ludlow St., Dayton, plans by Yount, Sullivan & Lecklider, Third National Bank Bldg., Dayton, Charles F. Kettering Hospital. **$4,000,000.** CD 2/19.

▲ **O., Macedonia**—HOMES—Indian Creek Village Corp., 181 Northfield Rd., Bedford. 350 homes. **$6,825,000.**

▲ **S. C., North Augusta**—HOSPITAL—North Augusta Hospital Assn., hospital. **$2,000,000.**

PRESTRESSED CONCRETE REPORT



Bridge job showing New England Concrete Pipe Corp. concrete girders constructed with 3/8" Leschen Prestress Strand. Each

NEW ENGLAND CONCRETE USES LESCHEN

"Leschen is a prime contributor to our product and market position ... we regard Leschen service as excellent" — R. A. Bierweiler, Vice President, New England Concrete Pipe Corporation.

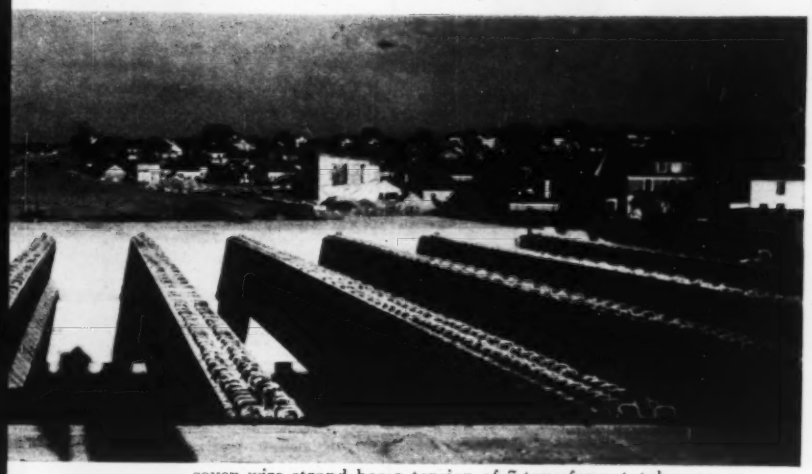
LESCHEN PRESTRESS STRAND

The New England Concrete Pipe Corporation has built 200 bridges of prestressed concrete in the past six years. One of their most recent jobs pictured here under construction is the Broadway Bridge, one of nine bridges on the East Providence Expressway, between Providence and East Providence, R. I. The Broadway Bridge required eighteen girders, 45" in depth, measuring 67'2" in length and weighing 20 tons each. Owner: State of Rhode Island. Design engineer: Chas. A. Maguire & Associates, Providence, R. I.

New England's largest concrete prefabricator, New England Concrete Pipe Corp. uses wire strand at a rate of 20,000 feet daily; and can be truly considered experts on wire strand quality. Quoting their Vice President, Mr. Bierweiler, "It is obvious that a public project, subject to inspection by the State of Rhode Island and usage by literally millions of citizens, must meet the most exacting and rigid tests, and must be constructed in accordance with the most advanced ... engineering techniques and products. We have selected Leschen Strand for our prestressed concrete box girders in keeping with this standard of quality."

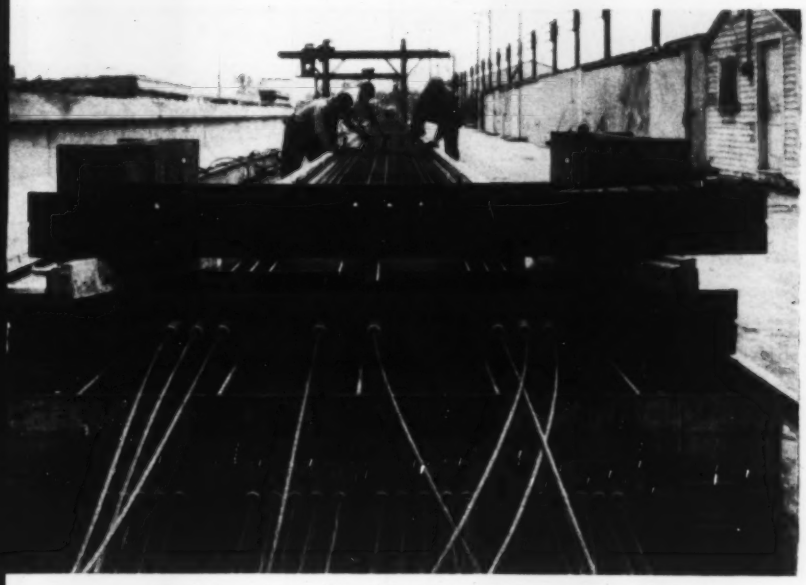
If you would like to talk with a Leschen engineer or receive complete specifications on Leschen Prestress Strand, write to: *Leschen Wire Rope Division, H.K. Porter Company, Inc., 2727 Hamilton Avenue, St. Louis 12, Missouri.*

Mr. Bierweiler, and Mr. A. Rossi, Prestressed Concrete Foreman, inspecting Leschen Prestress Strand. According to Mr. Bierweiler, "We apply 14,000 pounds tension on each Leschen strand combined with 6,000 p.s.i. concrete. The result is maximum resilience and basic strength."



seven-wire strand has a tension of 7 tons for a total 340-ton squeeze of prestressed force in each girder.

PIPE CORPORATION PRESTRESS STRAND



End view of one of five New England Concrete Pipe Corp. casting beds. Stressed with Leschen Prestress Strand.

LESCHEN WIRE PORTER ROPE DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

▲ **Tex., Houston**—SHOPPING CENTER—Albert A. Haufman, William H. Levy & Sam Suravitz, 2501 Rice Bldg., plans by Irving R. Klein & Assocs., 1317 Austin St., Suburban Shopping Center, Westheimer and Piney Point, **$2,000,000**; area and auto center paving **$100,000.**

▲ **Utah, Provo**—ADMINISTRATION and GENERAL SERVICES—Brigham Young University, plans by Fetzer & Fetzer, 415 Zions Savings Bank Bldg., Salt Lake City, 3 story, bsmnt., 96,000 sq. ft. Administration and General Services Bldg. at University. **$2,000,000.** CD 12/11/57.

▲ **Wash., Zenith**—RETIREMENT HOME—Washington Baptist Convention Retirement Home, Inc., 321 1 Ave. W., Seattle, plans by J. Graham & Co., 1426 5 Ave., Seattle, Zone 1, 4 story, apartment-type retirement home, **$3,000,000**. Constr. in Fall.

▲ **Ont., Ottawa**—HOTEL—National Management Ltd., 620 Cathcart St., Montreal, Que., plans by Max W Roth, 1015 Sherbrooke St. W., Montreal, Que., Lord Elgin Hotel addn., 300 rooms, convention hall, Elgin St. **$3,500,000.**

INDUSTRIAL BUILDINGS

▲ **Calif., Anaheim**—PLANT—Thompson Ramo Wooldridge Inc., 23555 Euclid Ave., Cleveland 17, O., plant to house west coast div. **$2,000,000.** Constr. September.

▲ **Calif., Manhattan Beach**—PLANT—Pacific Semiconductors, Inc., 10451 W. Jefferson Blvd., Culver City, plans by George Vernon Russell, 410 N. Rosenell Terr., Los Angeles, 250,000 sq. ft. rein.-con., steel frame, mfg. plant, Rosencrans and Aviation Blvds. **$6,000,000.**

▲ **Calif., San Jose**—PLANT—San Jose Steel Co., Inc., 195 N. 30th St., plant. **$2,000,000.** Constr. 1959-1960.

▲ **Calif., South San Francisco**—PARKING GARAGE—Barrett Garages, Inc., 735 Harrison, San Francisco, plans by Welton Becket & Assocs., 153 Maiden Lane, San Francisco, parking garage San Francisco International Airport. **$5,000,000.**

▲ **Me., Lewiston**—PLANT—Raytheon Mfg. Co., Foundry Ave., Waltham, Mass., manufacturing plant, Lisbon Rd. **$2,000,000**. Anderson, Nichols & Co., 150 Causeway St., Boston, Mass., engrs. Constr. 1959.

▲ **N. J., Princeton**—AGRICULTURAL LABORATORY, etc.—American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., plans by Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., agricultural laboratory, **$4,500,000-$5,000,000**; farm bldgs., **$400,000**; sewage plant, **$88,000**, Farm Center, Brunswick Pike and Quaker Bridge Rd. Bids this summer.

▲ **N. M., Albuquerque**—PLANT, etc.—American Gypsum Co., c/o F. M. Standley Sinns Bldg., plans by Johnson & Johnson, Engineers & Architects, Inc., 111 W. Washington St., Chicago 2, Ill., structural steel, steel frame mfg. plant, **$7,500,000**; earth site work, **$60,000**; repair shop, **$150,000**; brick veneer laboratory-office, **$400,000.**

▲ **Tenn., Memphis**—PLANT—Montana Ferro Alloys Inc., Fite Rd., Woodstock, Memphis, plant imprvs., addns. incl. installation open arc tilting furnace, Fite Rd. **$2,000,000.**

▲ **Tex., Orange**—PLANT, etc.—NGL Corp., Earl F. Gray Jr., pres., 5619 Fannin St., Houston, petroleum processing plant, **$8,500,000.** rein.-con. fdns. plant **$250,000**; plant area lighting sys. **$90,000.** Refinery Engineering Co., 108 N. Trenton St., Tulsa, Okla., consult. engrs. CD 6/30.

▲ **Tex., Sweeny**—PLANT, etc.—Phillips Chemical Co., Sweeny, ethylene production plant enlargement **$15,-000,000**, ethylene pipe lines in area, **$100,000**, water lines **$55,000.**

▲ **W. Va., Neal**—PLANT—Navamont Corp. (sub Montecantini Chemical Co.), 2 Broadway, New York, N. Y., and Milan Italy, plant to mfg. polypropylene and other Petro-chemicals, research and engineer laboratories, mines, power plant, **$10,000,000.** Bids in August.

▲ **Ont., Windsor**—PLANT—Chrysler Corp. of Canada, Ltd., Windsor, aluminum die casting plant. **$2,000,-000.** CD 11/18/53.

UNCLASSIFIED

▲ **Miss., Pascagoula**—PORT FACILITIES—Bd. Supervs. Jackson Co., Pascagoula, voted bonds June 27, port facilities for city and nearby Bayou Casotte Development. **$10,000,000.** Henry V. Allen & Assocs., Lamar Life Bldg., Jackson, engrs. for state. Ewing Engineering Corp., 150 Savannah, Mobile, Ala., survey engr. for Jackson Co. CD 1/20.

▲ **O., Cleveland**—RECREATION IMPRVS.—City, City Hall, bond election Nov. 3, recreation imprvs. **$3,000,000.**

▲ **Oklahoma-Missouri-Kansas**—K.V.A. ELECTRIC LINE, etc.—KAMO Electric Co-Operative, Vinita, 163 mi. 69 K.V.A. electric line, switch stations and interconnections from Table Rock plant in Missouri, Kansas and Oklahoma. **$4,174,000.**

▲ **Oregon**—DISTRIBUTION AND TRANSMISSION LINES—Harney Electric Co-operative, Burns, 700 mi. distribution lines, 190 mi. 115-kv transmission lines, Harney and Malheur Counties. **$5,100,000.** Robert Welty, Box 282, The Dalles, consult. engr.

▲ **Tex., Orange**—STEEL TANK FARM, etc.—Orange County Navigation & Port Dist., steel tank farm; rein.-con. fdns., **$2,500,000**; products warehousing or storage **$250,000**, near here. NGL Corp., lessee for 30 years. CD 10/11/57.

(Proposal Advertisements see pp. 79 to 81)

Uniform High Quality Concrete with PLASTIMENT

This 415 foot diameter concrete ring girder will support the retractable, stainless steel dome of Pittsburgh's new Civic Auditorium. Concrete was placed at ambient temperatures varying from 35° F to 95° F. By varying the proportions of PLASTIMENT according to temperature, the water/cement ratio and setting time were kept nearly constant and the quality of concrete, consequently, uniform. PLASTIMENT is specified in over 40,000 cubic yards of concrete for this structure.

To achieve quality and uniformity in concrete with economy, use PLASTIMENT. Call Sika or your nearest distributor for complete technical information.

Owner:
PUBLIC AUDITORIUM AUTHORITY OF PITTSBURGH AND ALLEGHENY COUNTIES
Executive Director: EDWARD FRAHER
Resident Engineer: H. REY HELVENSTON
Architects: MITCHELL & RITCHEY – Pittsburgh, Pa.
Consulting Engineers (substructure):
R. A. ZERN – Pittsburgh, Pa.
Consulting Engineers (superstructure and retractable dome):
AMMAN & WHITNEY – New York, New York
General Contractor:
DICK CORPORATION – Large, Pa.
Ready-Mix Suppliers:
I. K. DAVISON & BRO. – Pittsburgh, Pa.

SIKA CHEMICAL CORPORATION
PASSAIC · NEW JERSEY
COMPOUNDS FOR MASONRY and CONCRETE CONSTRUCTION

DISTRICT OFFICES: ATLANTA • BATON ROUGE • BOSTON • CHICAGO • DALLAS • DETROIT
PHILADELPHIA • PITTSBURGH — DEALERS IN PRINCIPAL CITIES — AFFILIATES AROUND THE WORLD

RELIABILITY • EXPERIENCE • SERVICE

OTHER SIKA ADMIXTURES

SIKACRETE
Accelerating
Densifier

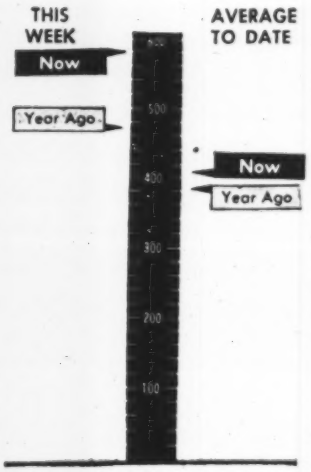
SIKA AER
Air Entraining
Resin Solution

INTRAPLAST
Expanding
Grouting Aid

SIKA NO. 1
Integral for
Cement Mortar

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

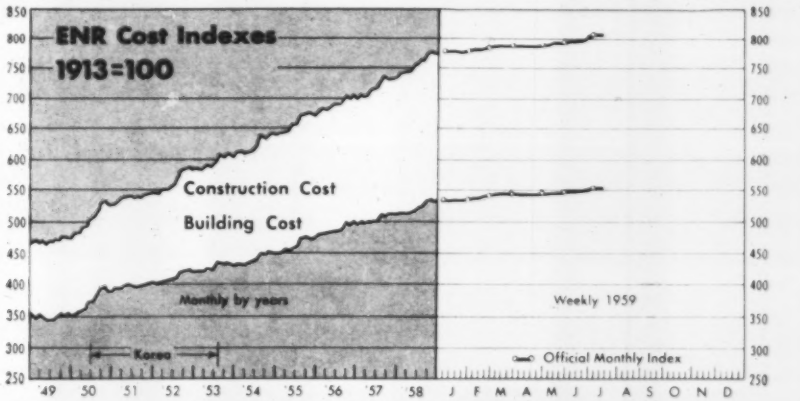
	This Week	Cum. 30 wks 1959	Chge '58-'59 %
	millions		
All Heavy Constr...	$651.7	$12,498.6	+ 7
By Ownership			
PRIVATE	237.3	6,054.9	+25
PUBLIC	414.4	6,443.7	− 7
State & Municipal	383.4	4,593.3	− 6
Federal	31.0	1,850.4	− 9
By Type of Work			
PUBLIC			
Waterworks	3.5	262.2	+36
Sewerage	8.2	390.8	+11
Bridges*	131.2	471.4	+13
Highways	84.2	1,851.6	− 2
Earthwork, Dams & Waterways	97.7	570.3	−21
Buildings			
Excl. Housing	61.2	1,590.6	+ 2
Housing	8.7	457.2	−47
Unclassified	20.1	857.0	− 6
PRIVATE			
Buildings			
Mass Housing	88.9	2,793.8	+21
Commercial	71.6	1,333.8	+19
Industrial	56.6	1,619.4	+45
Unclassified	19.8	300.5	+14

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

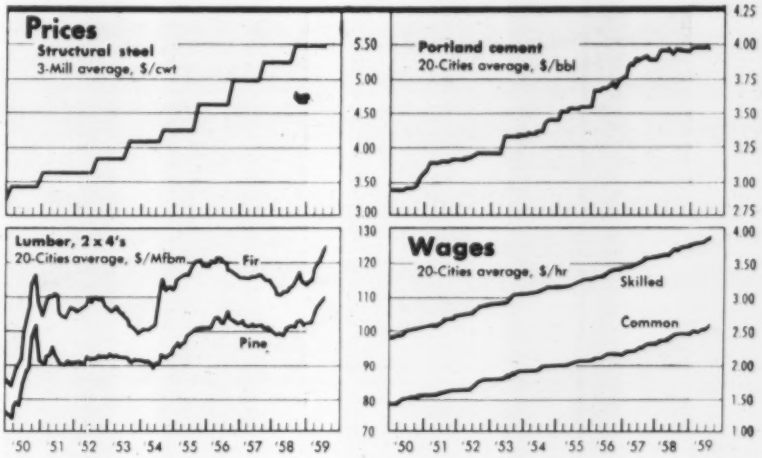
New Capital For Construction	Week of July 16	Cum. 29 wks 1959	Chge '58-'59 %
	millions		
Corporate Securities	$ 53.7	$2,276.4	−31
State and Municipal:			
All except housing	80.6	3,619.6	− 6
Housing	26.1	75.2	+122
Federal Loans	....	87.7	−20
Federal Aid	....	18.0	....
Total Nonfederal	$160.4	$6,076.9	−17
Federal Appropriations:			
Projects in U. S.	....	$38.3	−95
Outside U. S.	....	.....	−100
Total New Capital	$160.4	$6,115.2	−25



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of June 16 1959	% Change from June 18 1959	July 17 1958
Construction Cost	809.16	+1.3	+6.0
Building Cost	553.64	+0.7	+5.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost July 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost July 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	609	+2.5	+7.2	477	0	+2.1
Baltimore	744	+4.6	+6.1	552	+1.5	+4.7
Birmingham	632	+1.3	+6.6	505	+1.4	+5.2
Boston	830	−0.2	+4.4	558	−0.5	+4.7
Chicago	923	+5.5	+10.0	586	+1.4	+8.3
Cincinnati	818	+3.5	+6.1	536	+1.3	+5.7
Cleveland	915	−0.4	+5.3	548	−1.1	+5.2
Dallas	584	+1.9	+2.8	485	+2.3	+5.0
Denver	742	0	+2.3	537	0	+2.3
Detroit	962	0	+12.8	599	0	+7.9
Kansas City	804	+1.4	+5.5	559	+2.0	+6.1
Los Angeles	879	+4.8	+7.7	557	+0.9	+7.9
Minneapolis	860	+0.6	+5.1	569	+0.9	+4.0
New Orleans	625	+0.8	+5.6	504	+1.0	+5.7
New York	1018	+4.1	+9.0	649	+1.6	+7.8
Philadelphia	792*	−2.5	−0.4	576*	−1.2	+1.2
Pittsburgh	852	+1.4	+3.8	601	+1.0	+3.4
St. Louis	885	−0.7	+5.0	584	−2.0	+3.9
San Francisco	824	0	+3.3	550	0	+7.6
Seattle	836	0	+6.0	505	+1.2	+6.5
U. S.—20 Cities' average	807	+1.5	+5.8	552	+0.7	+5.3
Montreal	620	+1.6	+2.8	457	+1.5	+1.8
Toronto	663	−1.2	+9.8	494	−2.2	+5.3

* Revised.

Generator Competition Hotter

- **U. S. equipment is specified for Wanapum Dam despite 5% higher general contract price.**
- **Domestic manufacturers cut generator prices to help stem foreign competition.**

The fight between foreign and domestic producers of power-generating equipment shows all signs of getting hotter.

It's also more apparent that the "Buy American" act will come under increasing fire both here and abroad. This law requires use of domestic products and equipment in all federal-aid projects unless the foreign material results in a 6% or more lower contract price than when domestic materials are involved.

Spotlighting the issue last week were these developments:

• **The construction contract for Wanapum Dam on the Columbia River in Washington State, awarded last week, calls for the use of General Electric Co. generators, even though they'll cost $4.2 million more than a Swedish brand.** Total contract price for Wanapum is $93.3 million, 5% above the alternate low bid specifying the Swedish generators.

• **Both General Electric and Westinghouse Electric Corp. announced substantial price cuts on their steam turbine generators.** Allis-Chalmers Manufacturing Co. said it would "remain competitive."

The Wanapum Dam contract went to a combine headed by Morrison-Knudsen Co. Inc., of Boise, Idaho. Grant County Public Utility District said it chose U.S. equipment over the lower priced foreign alternate because of "unsettled world conditions," difficulty in obtaining replacement parts and inability of the foreign manufacturer to assure adequate service.

The GE generators carried a $15.6-million price tag compared to $11.3 million for the foreign equipment. The foreign low bid was made by a Swedish firm, A.S.E.A. Electric Co.

A day before the contract was awarded, English Electric Export & Trading Co. filed suit in Ephrata, Wash., to restrain Grant County PUD from awarding the contract to the Swedish company. It charged that A.S.E.A. Electric equipment did not meet the specifications.

English Electric also bid lower than GE on the generators, but its price was part of the second low construction bid, turned in by Northwest Dam Constructors. Northwest's bid was for $96 million.

PUD shrugged off the court action. It said the suit had not influenced its decision to stipulate use of domestic equipment.

The PUD stayed with its main contention that GE could provide better repair and test facilities and quicker replacement of parts.

Although the PUD is not bound by the Buy American act, a spokesman in the U.S. Office of Civil Defense Mobilization recalled that PUD's statement adopted almost verbatim the language used last year by GE when it asked for protection against foreign competition.

GE had encountered hot competition for the equipment business at Oahe Dam in the Missouri River Valley (ENR May 8, 1958, p. 109). GE got the contract, but not until a second round of bid calls had brought the company down from its original bid by $2.5 million.

Prior to the Oahe contract, U.S. manufacturers had lost out in bidding for several Bureau of Reclamation and Corps of Engineer contracts.

Announcements of price cuts could not have been made at a more dramatic time. The GE statement preceded award of contracts by four days and the Westinghouse came the day after the award.

GE's schedule of reductions is: $1 a kilowatt on units of 200,000-kw rating; $1.50 a kw on 250,000-kw units; $2 a kw on 300,000-kw units; $2.50 a kw on 350,000-kw units; $3 a kw on 400,000-kw units; $3.25 a kw on 450,000-kw units; $3.50 a kw on 500,000-kw units; and $4 a kw on 600,000-kw units.

On the 600,000-kw unit, a buyer could save $2.4 million.

The winning construction group, known as Grant County Constructors, includes Morrison-Knudsen, Henry J. Kaiser Co., Macco Corp., Raymond International and F&S Construction Co.

Their basic bid, specifying foreign equipment, was $88.9, well below the engineers' estimate of $137.6 million—giving more evidence of the tough competition.

Included in the winning contract are 10 hydraulic turbines to be furnished by a Canadian firm, Dominion Engineering Co. (Montreal), Ltd. The price tag for these is $10.2 million.

Industrial Building Show Slated

Industrial building will have its own show next year, the first ever produced for those who buy, build and supply for this phase of construction.

The Industrial Building Exposition and Congress will be at the New York City Coliseum from December 12 to 15, 1960. The show will be held annually after 1960, according to Clapp & Poliak, Inc., New York City exposition management company, producers of the event.

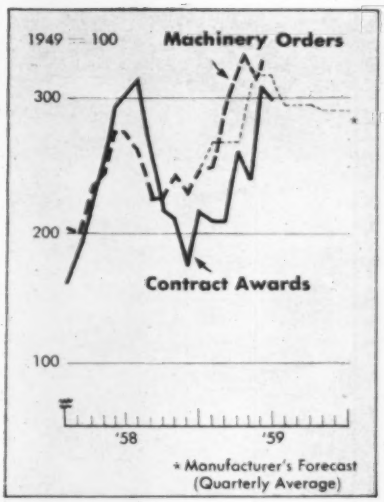
Discussion sessions will take up such subjects as planning new industrial construction, financing, modernization of older buildings, new types of construction, equipment layout, construction materials, site selection and maintenance problems.

Exhibits will be divided into eight major categories:

Structural products—foundations, walls, floors, windows; Mechanical products and systems—conveyors, elevators, waste disposal systems; Electrical—power distribution, lighting, process control; Plant site and services—transportation, power water; Financial—state and municipal services, banks, other financial services and sources; Auxiliary services—landscaping, parking; Employee services—cafeterias, washrooms, recreation; Heating and air conditioning services.

The board of sponsors for the Exposition and Congress includes 28 architects and industrial executives with responsibility for top management, construction and plant operation.

Co-chairmen of the board are Clifford S. Strike, president, F. H. McGraw & Co., Inc., Hartford; Albert C. Martin, Jr. of Albert C. Martin & Associates, Los Angeles; and N. M. Martin, director, facilities planning and construction for International Business Machines Corp.



Orders for New Equipment Continue at Record Pace

Contractors are investing in new equipment at a record pace.

Order volume in May topped the year-ago pace for the eighth consecutive month. The McGraw-Hill Economics Department of New Orders Index rose to 329 in May (based on 1949 = 100). The May value was 5% above the revised orders index of 314 for April.

For the first five months of this year, equipment orders were 33% ahead of 1958 and exceeded 1951's previous record for the comparable period by 16%.

The rise in equipment orders in May reflected the even greater increase in heavy construction contracts.

Reflecting the big new-order volume are the reports on shipments, by the U. S. Department of Commerce.

Value of earthmoving equipment shipped from manufacturers' plants in this year's first quarter was more than 40% above the fourth quarter volume of 1958 and the first quarter of 1958.

The first quarter New Orders Index for construction and mining machinery was 25% above the last quarter of 1958 and 41% above the first quarter of 1958.

The bigger percentage increase of shipments in the first quarter compared to the smaller increase in orders may have been due to rising order backlogs and curtailed shipments during the strike period in late 1958.

Shipments of crawler tractors in the first quarter totaled $72 million, more than 50% above the fourth quarter. Wheel tractor shipments rose more than 30% to $21 million, and tractor shovel loaders rose 40% to $22 million.

The Outlook for Money Costs

The cost on money keeps going up. And there are no indications that the competition for funds will ease.

While there may be slack in some sectors, this at best will only stabilize interest costs at their present high level.

For the construction man, the rising cost of money could mean a slowdown in business. Most new construction — public and private — is financed with borrowed funds—and higher money costs may nudge some buyers and builders out of the market.

Evidence of increased borrowing costs keeps turning up in many areas.

Homebuilders report they have sufficient financing commitments to produce at current rates of high demand for at least three months, many for the rest of the year (ENR July 16, p. 21).

But there are signs that homebuilders may encounter some difficulties with financing commitments when the time comes for them to plan their homebuilding schedules for 1960. Money costs are high and give all indication of going higher. The buyer must pay these costs.

Corporations and utilities are finding their treks to the money market increasingly expensive. Consolidated Edison Co. of New York recently borrowed $75 million at a 5.125% interest charge. Public Service Electric & Gas Co., New Jersey, borrowed $50 million at the same cost. In June 1958, Consolidated Edison raised $50 million at only 4%.

The U. S. government is no exception to the rules of the market place. Two weeks ago the Treasury borrowed $2 billion through the sale of one year bills. It's paying 4.728% interest. (In ENR July 16, p. 144, a typographical error resulted in reporting the interest rate as 3.728%.)

And last week, the Treasury offered to pay 4.75% interest on nearly $14 billion worth of new securities. The Treasury will exchange the new issues for debt maturing August 1. Present holders will be offered their choice of a 12½-month note or a four-year, nine-month note.

The rate on the new U. S. issues is the highest paid by the federal government since June 1929. Then, the Treasury paid 5.375% on a nine-month certificate.

State and local governments are also being forced to pay more, despite their tax-exempt status. Early this month, Washington State's Grant County Public Utility District sold $195 million in bonds to finance construction of Wanapum Dam. The district is paying a net interest rate of 4.9%. That compares to a rate of 3.875% on $166 million worth of bonds it sold in June 1956 to finance Priest Rapids Dam.

There is, however, an added twist to the latest Wanapum financing. Grant County PUD invested $150 million to $170 million of the proceeds from the bond sale in 91-day Treasury bills and longer securities to 1963 yielding from 3.4% to 4¼%.

However, there are some factors that may tend to offset some of the upward pressures in the money market. During the steel strike, some funds will be released for investment. Between $1.5 billion and $2 billion more than normal may be tied up in steel inventories. As these stocks are sold, the loans that financed the stockpiling will be liquidated.

Consumer credit demands may also slacken. In the first five months of this year, consumer credit outstanding rose by $2.4 billion on a seasonally adjusted basis, the Federal Reserve Bank of New York reports. In May, the rise was $545 million. Compared to the growth in other kinds of credit, the bank suggests the recent magnitude of consumer credit demands indicates such increases may be near peak rates.

Also competing for savings, the only source of venture capital, is the stock market. Large amounts of money are being diverted from savings institutions. There are indications these funds are being placed in stocks as a hedge against inflation.

Mutual savings banks and savings and loan associations report slight increases in withdrawals, although net savings continue to show gains. To attract more deposits and hold deposits, many savings institutions have raised, or are planning to raise, the dividend rate paid to depositors.

This is a good indication that an important group of financial authorities does not anticipate an early decline in the over-all demand for money, which would result in a decline in the cost of money.

9 out of **10** loader builders

Because TORQMATIC makes the load go faster

Call the roll of front-end loader manufacturers and you'll find that 9 out of 10 of them—Case, Chaseside, Hough, Scoopmobile, Nelson, Pettibone-Mulliken, Thew-Lorain, Tractomotive and Trojan—use TORQMATIC DRIVES.

This overwhelming acceptance is proof positive that the Allison TORQMATIC CRT-3331 fulfills all requirements of leading loader manufacturers. It was designed *specifically* for loaders, combining the modern thinking of loader manufacturers with our own 11 years' experience in designing and building TORQMATIC DRIVES.

And there's reason aplenty for this acceptance—reasons that put you money ahead when you buy a loader equipped with an Allison TORQMATIC DRIVE.

For instance, TORQMATIC gives you "Sense-Feel" control. So the operator can "feel the load" when he's reversing his direction of travel. That means better, surer loader control—more round trips per shift—greater productivity and profit per man and machine.

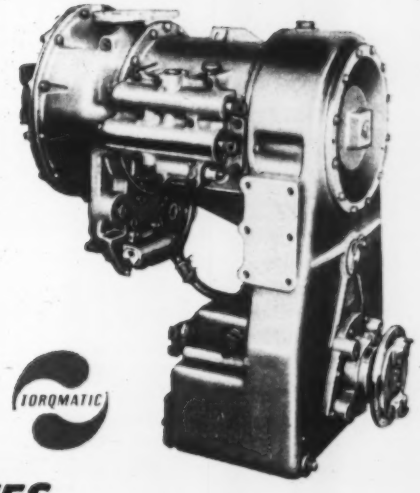
TORQMATIC gives you unitized design with the torque converter and hydraulic transmission in *one compact unit*. This eliminates the need for piping and hoses which can plug, crack or leak. And built right into the single-unit TORQMATIC DRIVE you find Allison's famous maintenance-free clutches.

Only TORQMATIC gives you 3 speeds forward and 3 reverse, with gear ratios exactly tailored to the job. *Saves shifts—speeds job cycles.* Loaders equipped with 3-speed TORQMATIC dig, crowd, load, travel and dump far faster.

use Torqmatic Drive

What's more, TORQMATIC completely eliminates shift shock. It's done through the use of planetary gearing and a tapered shift. So equipment lasts longer, runs better, is subject to far less wear and tear.

Want to know more? Your loader salesman has the whole story. Make sure you get it before you sign your next loader order.



Allison Division of General Motors, Indianapolis 6, Indiana
In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

THE MODERN DRIVE FOR MODERN EQUIPMENT

Allison TORQMATIC

TORQMATIC® DRIVES

What's Next for the Labor Bill?

- **The House Labor Committee left in the construction industry amendments, but it softened the Senate's Kennedy bill.**

- **Once the bill reaches the House floor, you can expect a battle and passage of amendments that will make it tougher.**

When the House Labor Committee was shaken up early this session and reorganized with a heavy liberal majority for the first time in many years, no one knew quite what to expect from it.

This week, the committee gave a clearcut answer. Acting on the first major piece of legislation to come before it since the shakeup—the labor reform bill—the committee became a "runaway."

It took the Senate Kennedy-Irvin bill and made 102 revisions in it. The revisions create a bill that is considerably easier on labor than the Senate bill in meeting abuses of union power.

Formal committee approval of the measure was slated for midweek.

The committee action promises a bitter battle over the measure once it reaches the House floor. It is so far out of line from what many in the House want that plans are being made to rewrite it extensively on the floor.

The revised bill contains two provisions of significance to contractors:

• It adds a provision sought by the AFL-CIO building trades unions that would ease the rules on secondary boycotts at construction sites where several employers are engaged. The bill would allow picketing to take place against one employer without the union risking charges of a secondary boycott against the other employers. Technically, this provision is a reversal of the Supreme Court decision in the Denver Building Trades case and is one the building trades unions have sought consistently for years. President Eisenhower has endorsed it.

• It leaves in the bill a Senate prehire amendment to the Taft-Hartley Act to permit building contractors to negotiate agreements with building trades unions without requiring a representation election in advance. It authorizes a seven-day union shop clause for the construction industry and legalizes certain specified referral standards for hiring purposes.

The committee, however, refused to remove two provisions opposed by unions. One would prevent the teamsters from forcing employers to sign hot-cargo contracts. The other would place some controls on organizational picketing.

The committee also acted to meet the "no-man's land" problem whereby minor labor dispute cases have been ignored by the National Labor Relations Board, while the states have not been allowed to take jurisdiction. The bill would expand the board from five to seven members and require it to exercise its full jurisdiction. It would, however, allow it to delegate authority to regional directors to handle representation cases in the future.

The new makeup of the House committee allowed northern liberal Democrats to break the almost autocratic hold that committee chairman Graham Barden (D., N.C.) had held for years. Acting in alliance with Southerners and Republicans, Mr. Barden had been able to stymie labor legislation sought by more pro-union members.

But the heavy Democratic election victories of last year added six new northern Democrats to the committee and cut the Republican representation from 12 to 10. As a result, the liberal Democrats were able to muster a 17-13 majority in the final showdown. The minority generally was made up of 10 Republicans and three Southerners—Mr. Barden, Carl Elliot (D., Ala.) and Phil Landrum (D., Ga.).

The Labor Committee had spent a month drafting the bill—under heavy pressure from the AFL-CIO.

The AFL-CIO is far from happy with the Senate bill, though officials concede they could live with it. AFL-CIO President George Meany met with committee leaders to try to get them to drop completely the controversial "bill-of-rights" section. This section sought to guarantee democratic rights to rank-and-file members, allow them freedom of speech in union affairs and protect them against election abuses.

The "bill of rights" was left in, though its provisions were blunted in many respects to make it more palatable to the unions. Two key provisions that were especially opposed by the AFL-CIO were toned down extensively:

• Eliminated was the provision exposing union officers to criminal prosecution for violating the rights of rank-and-file workers. The committee substituted a clause allowing unionists to seek court injunctions to prevent officers from continuing abuses.

• The committee also limited the powers that the Senate bill would have invested in the Secretary of Labor for enforcing various labor provisions. It would still require union officers to report regularly on union finances, though allowing officers more flexibility in handling the finances. This is interpreted to mean that union officers would still have the right to allocate funds for political purposes.

Backers of the revisions contended that the measure was a moderate approach to the problem of labor reform—one that wouldn't satisfy either side but would "distribute the misery around; some for the bosses and some for the workers."

Paradoxically, the highly controversial bill drafted by the committee last week is considered by some to have improved chances for a labor reform bill this year.

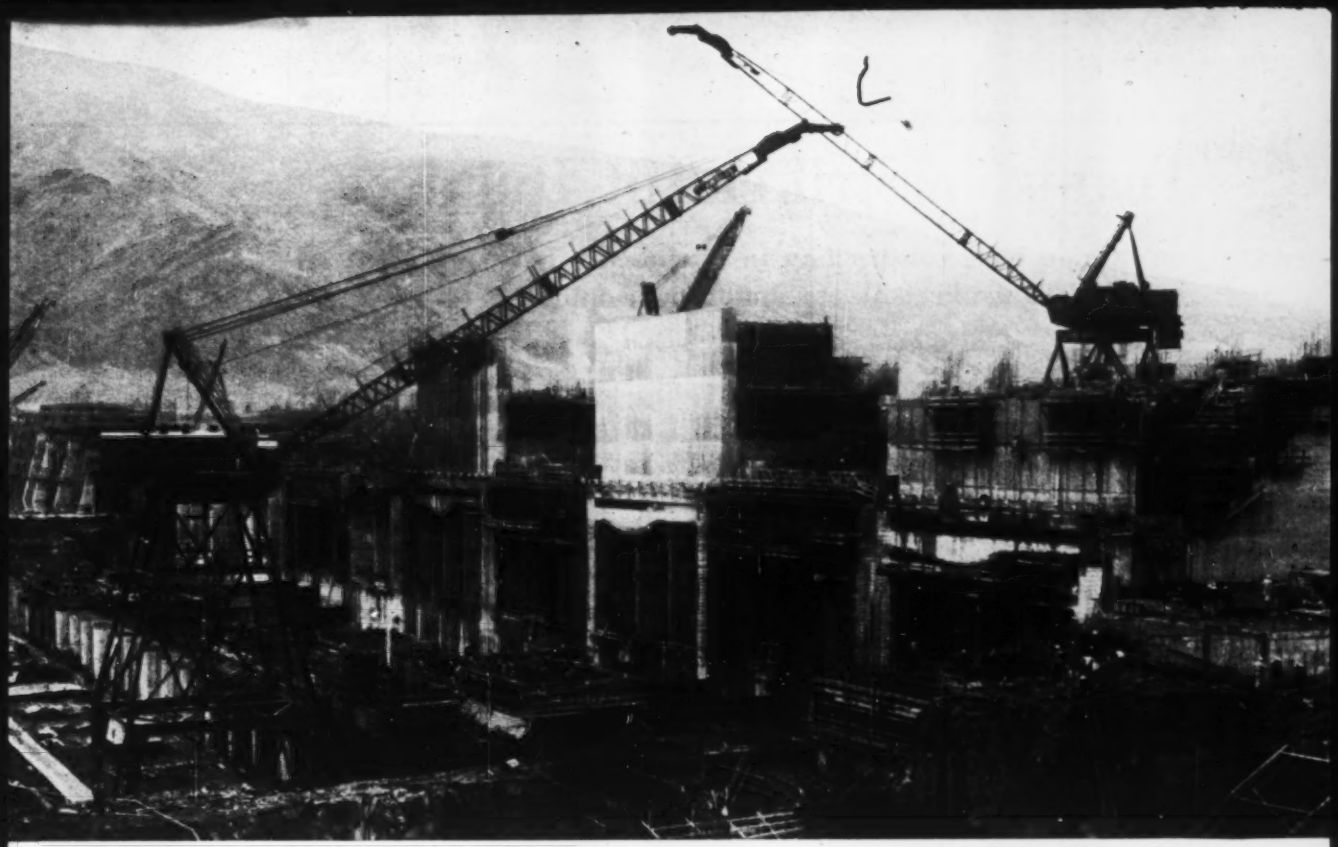
Just the fact that it was reported out of committee gives it a leg up toward eventual passage. There still are serious hurdles left before final passage.

The bill must receive clearance from the ultra-conservative House Rules Committee. The committee normally could be expected to want a stronger bill. But there is heavy pressure from Democratic leaders to clear a reform bill before the 1960 election-year makes it politically impossible.

There is a feeling that the Rules group, after initial grumbling, may send the bill to the House with the understanding that it would be amended considerably on the floor.

What would be likely to emerge from a floor scrap is a bill closer to the original Senate version than the one that came out of committee.

(*Labor continued p. 78*)



16 Months Ahead of Schedule...

AMERICAN REVOLVERS DISPLAY 'BIG BONUS' FEATURES ON PRIEST RAPIDS DAM, NOW OVER 70% COMPLETE

Four American Revolvers established an outstanding production pace on the giant Columbia River hydro-electric plant at Priest Rapids, Washington. At last report, the project is now 16 months ahead of schedule. Time saved on various construction phases point to the ingenuity of American Hoist for developing superior equipment capable of handling the most strenuous loads... steel, forms and concrete buckets.

Designed expressly for heavy-duty, time-saving construction work on massive projects such as this impressive Merritt-Chapman & Scott job, American Revolvers are also working at the Lewiston and Tuscarora sites.

As in most multi-million dollar construction projects, contractors find it practical and profitable to team high-capacity American Revolvers with smaller American cranes . . . Truck, Self-propelled and Crawlers . . . for go-anywhere, do-anything workhorse duties. American cranes, from 12½ tons to 400 ton capacities, and American excavators, from ½ to 2½ yards, will help you keep ahead of schedule on your next Big Job. For handling top capacities at a faster pace . . . for longer, more efficient service . . . you can always count on dependable American cranes and excavators.

EXCAVATORS-CRANES
to 2 yds.-60 tons
LOCOMOTIVE CRANES
to 130 tons
DERRICKS-HOISTS
to 800 tons
REVOLVER CRANES
to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

Teamster Strikes Hit Builders

Union halts construction in Cincinnati, New York and Milwaukee; Alaska shutdowns continue

Labor unrest continues to trouble the construction industry as the building season reaches its peak period. Though several strikes were ended by new labor contracts last week, new walkouts are still shutting down major construction work.

Not all construction shutdowns came from the AFL-CIO building trades. Three teamsters locals halted work in Cincinnati, New York City, Long Island and Milwaukee.

In Cincinnati, 1,800 truck drivers walked out, slowing all major home, road and building construction there. They rejected wage increases of 18 to 21 cents an hour offered by four employer groups.

In New York City and Long Island, strike by teamsters continued to halt major office and apartment building construction in the area. The walkout by 1,200 concrete-truck drivers resulted in a lay-off of 50,000 other construction workers by the end of the week. The union rejected an offer for a 32½-cents-per-hour wage increase made by the 50 firms being struck.

In Milwaukee, a strike by 1,000 drivers shut down building and paving work. If the strike continues, 20,000 more workers may be affected. The teamsters rejected an offer by Allied Construction Employers' Association for wage increases totaling 17 cents per hour this year, 10 cents next year and eight cents in 1961. The union also wants to establish a pension fund and a guaranteed workweek of 34 hours.

In Alaska, where construction work has been crippled by strikes for nearly three weeks, some $44 million worth of defense jobs are still closed down.

The Alaska Council of Carpenters has rejected, for the second time in a row, a contract proposal by the Associated General Contractors.

Union members, now averaging $4.25 an hour in base pay, want a 50-cent hike.

The last rejected offer was a two-year contract calling for a 28-cent boost retroactive to March 15 and another 25 cents next year. The offer also included improvements in health and welfare contributions, premium pay, travel pay, foreman pay and hiring procedures.

Meanwhile, the AGC has settled with the operating engineers on the basis of a two-year contract—a 6½% increase now, 5½% next year. Six other crafts are expected to follow suit. Plumbers, seeking a 30-cent boost, returned to work Monday under an agreement to arbitrate.

In California and Colorado, carpenters also reached agreements with their employer groups.

In California, carpenters and the AGC settled when the Northern and Central California Chapter of the AGC notified its members to pay the wage increases agreed upon by seven other employers' groups and the Bay Counties District Council of Carpenters (ENR July 9, p. 125). The contract calls for wage increases of 22½ cents an hour, effective June 16, and further increases in 1960 and 1961.

The AGC chapter also reached agreement with northern California teamsters. In a new 34-month contract, the teamsters won 73 cents per hour.

A carpenters' strike that tied up 70 major projects in Denver and northern Colorado is ended. The Denver Carpenters District Council, representing 3,600 carpenters in six locals, reached agreement with the Associated Building Contractors of Colorado.

The carpenters won 31 cents per hour in wage increases under a new two-year contract calling for a 16-cent raise immediately, 10 cents more per hour next July 1 and an additional 5-cent increase on July 1, 1961. The employers' group also agreed to:

- A "Kansas City" clause permitting the union to negotiate separate contracts with other employers, such as homebuilders.
- A union shop.

Another labor pact signed in the Denver area will assure uninterrupted construction on six Titan ICBM missile launching sites at Lowry Air Force Base. Morrison-Knudsen Co., Inc., and Associates, a joint venture, signed a contract with AFL-CIO craft unions to cover all workers on the $70-million project. The agreement, made with the Denver Construction and Building Trades Council, runs for the life of the project—estimated at two years. When work is in full swing, 750 to 1,000 men will be covered. The agreement provides that the company will pay prevailing industry wages now and in the future. The unions guarantee there will be no work stoppages.

Last week brought these other wage settlements:

- Dallas plumbers signed a two-year contract to end a one-week strike. The union won a 12½-cent hourly wage increase now and another 12½-cent raise next July 1. In addition, employers will contribute 7½ cents an hour to a health and welfare fund, and one cent per hour to apprentice training.
- Increased health and welfare benefits settled a 24-day strike by 3,000 laborers in West Virginia.
- Dallas glaziers ended a week-long walkout by signing a two-year contract that gives them an immediate six-cent wage boost, another six-cent raise a year from now and a vacation program.
- New England ironworkers ended a week-long strike by signing a three-year contract. The ironworkers get a 36-cent package raise—12 cents each year under the new contract.

EAA Takes First Step Toward Becoming National

Engineers and Architects Association has made its first concrete move toward becoming the framework for a proposed national federation of engineering unions—Engineers and Scientists Guild.

In a special convention EAA members passed enabling resolutions to set up a committee for revising the EAA constitution. The constitutional changes, which would decentralize EAA power to its five chapters, are necessary to satisfy other prospective ESG members.

The special convention was held because an earlier convention was sidetracked by internal politics (ENR July 9, p. 126).

One committee member will be selected from each EAA chapter. They will be charged with revising the constitution within six months.

Hiring of Nonresidents Aired at Labor Hearing

The Associated General Contractors of Wyoming has denied that its members have given preference to out-of-state residents in the hiring of construction workers.

The denial was made at a public hearing called by the state labor commissioner to investigate charges that contractors were not hiring Wyoming workers.

A spokesman for the AGC explained that contractors need skilled workers to operate their machinery as efficiently and productively as possible and that qualified Wyoming workers are not always available.

OFFICIAL PROPOSALS

Bids: August 6, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 6th day of August 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Rensselaer (Rte. 151)	FARC 59-43	Barracks Road, S.H. 102 Proj. S-497(1)	1 92	Asphalt Conc. Pavt. = 1.91 Mi.; Misc. Work = 0.01 Mi. R.C. Arch Br. 24' Sp.	$30,000 Plans $5	$552,000
Rensselaer & Saratoga (Rte. 67)	FARC 59-110	Stillwater-Schaghticoke, S.H. 1791 Proj. F-631(4)	0 42	Asph. Conc. Pavt., Raise & Rehabilitate Exist. 6 Sp. Truss Bridge, Steel Truss Br. 1 Sp. 180'	$15,000 Plans $5	264,000
Saratoga (Int. Rte. 87)	C.R. 59-3	Interstate Route 502-2-2 Sect. 3 Clifton Park-Malta		Removal of Human Remains	$150 No Plans Proposal $2	2,600
DISTRICT No. 3, EARLE E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga (Rte. 80)	R.C. 59-131	Vesper-Tully, S.H. 1070; Skaneateles-Hamilton Pt. 1, S.H. 330; Vesper-So. Onondaga Pt. 1, S.H. 557; Syracuse-Otisco Pt. 2, S.H. 1619	12 16	Asphalt Conc. Ty. 1A Pavt.	$40,000 Plans $5	737,000
Oswego (Int. Tour. Rte. 81)	FISH 59-1 FARC 59-1	Interstate Route 505 (Parish-Jefferson County Line, Pt. 1) Mapleview-Checkered House, S.H. 9284 Proj. I-81-2(18)110 and S-522(1)	9 48 (5 00 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 8.73 Mi.; 9" Cem. Conc. Pavt. (Ramps) = 2.22 Mi.; Asph. Conc. Pavt. = 2.02 Mi.; Top Crse. Graded Gravel = 1.51 Mi.; 8 Hy. Sep. Comp. W-F Beams 230.2', 135.4', 139.1', 112.1', 121', 119.4', 121.8' and 121.8'; 2 R.C. Twin Box Brs. 31' and 31'	$400,000 Plans $10	7,410,000
Wayne	R.C. 59-102	25 Various State Highways on Rtes. 14, 21, 31, 88, 89, 104, 104A, 350 and 414		Roadside Development	$350 No Plans Proposal $2	6,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	R.C.C. 59-117	City of Rochester: Inner Loop (Genesee River Bridge and Approaches) FACG 53-11	0 27	Sealing, Repairing and Painting Existing 15 Span Steel Stringer Bridge	$5,700 Plans $5	98,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus	FAC 59-12	City of Olean: East-West Arterial Highway (East State Street: Union St. to Barry St.). Proj. U-141(6)	0 14	Asphalt Concrete, Type 2A = 0.09 Mi. Misc. Work = 0.05 Mi.	$3,500 Plans $5	66,000
Erie (Int. Tour. Rte. 190)	FINTC 59-3	Interstate Route 506, N. Y. State Thruway, Niagara Section, Subd. N4 and N5 (City of Buffalo: Franklin St. to Porter Ave.). Proj. I-190-1(18)74	1 64 (0 60 Acc.)	Electrical Lighting Facilities	$5,500 Plans $5	99,000
Erie (Int. Tour. Rte. 190)	FINTC 59-4 NTC 59-5	Interstate Route 506, N. Y. State Thruway, Niagara Section, Subd. N1, N2, N3 and N7 Proj. I-190-1(19)72		Furnishing and Installing 28,700 L.F. Chain Link Fence	$5,000 Plans $5	90,000
Niagara (Rte. 18)	FARC 59-105	Youngstown-Olcott Pt. 2, S.H. 8324 Proj. F-461(7)	2 09	Asphalt Concrete Pavement	$9,000 Plans $5	171,000
DISTRICT No. 6, JAMES H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany (Rte. 19)	T.C. 59-3	Belmont-Scio, S.H. 5476; Canaadea-Fillmore-Hume, S.H. 5518; Fillmore-Portageville, S.H. 9210	0 03	Furnishing and Installing Traffic Signal	$700 Plans $5	13,00
Schuyler (Rte. 414)	FARC 59-113	Post Creek-Watkins Glen Pts. 3 and 4, S.H. 8402 Proj. F-591(4)	6 50	Asphalt Concrete Pavt.	$40,000 Plans $5	712,000
DISTRICT No. 7, ROBERT W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Franklin (Rte. 374)	FARC 59-109	Chateaugay-Canadian Line, S.H. 8040 Proj. S-81(2)	4 65	Bit. Double Surf. Treat. Pavt. = 4.54 Mi.; Asph. Conc. Ty. 1A Pavt = 0.11 Mi.; Widen Exist. Conc. Arch BR. 30' Span	$38,000 Plans $5	687,000
Franklin & St. Lawrence (Rte. 37)	FARC 59-100	Masena-Helena Pt. 1, S.H. 1261; Raquett River-Hogansburg Pt. 1, S.H. 1861 and Raquett River-Hogansburg, Pt. 2, St. Regis Indian Reservation-Fort Covington Pt. 1, S.H. 8396 Proj. F-580(15)	5 07	Asphalt Conc. Ty. 1A Pavt. = 5.03 Mi.; Misc. Work = 0.04 Mi.; 2 Hy. Sep. Comp. WF Beams; 3 Sp. 166.5' and 3 Sp. 167.5'; 1 RR Sep. Comp. I-Beam Twin 2 Sp 160' Ea., 1 Br. Deck Girder Cant. Type Twin 5 Sp. 710' Ea.	$290,000 Plans $5	5,245,000
Jefferson (Int. Tour. Rte. 81)	FISH 59-16	Interstate Route 505 Section 7 AB-2 (Pierrepont Manor to Adams) and S.H. 184; C.R. 107, C.R. 126, C.R. 112 & C.R. 110 Proj. I-81-3(13)135	5 57 (2 29 Acc.)	Asph. Conc. Type 1A Pavt. = 5.55 Mi. (M.L.) 2.29 Mi. (Acc.) Miscell. Work = 0.02 Mi.; 4 Hy. Seps. Twin Comp. I-Beams 3 Sp. 119'; 3 Sp. 144.3' and 146.8'; 3 Sp. 129.5', 3 Sp. 138.5' and 140'. 1 Hy. Sep. R.C. Rigid Frame Twin 1 Sp. 41.8', 1 Br. R.C. Twin Box 42' Sp., 2 Twin Comp. I-Beam Brs., 3 Sp. 291' and 3 Sp. 262'	$320,000 Plans $10	$5,774,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland (Rte. 9W)	R.C. 59-116	New Jersey State Line-Nyack Pt. 2, S.H. 5714		Cleaning and Painting 1 Bridge	$900 Plans $5	16,000
Ulster	FASS 59-20	Hoagerburgh Hill Road Co. Rd. No. 70 (Bruynswick Bridge Co. Br. No. 150); Proj. S-527	1 35	Asph. Conc. Pavement Comp. I-Beam Br. 2 Sp. 186'	$17,000 Plans $5	313,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17)	FARC 59-115	Windsor-Deposit, S.H. 5338; Binghamton-Windsor Pt. 4, S.H. 5241; Binghamton-Windsor Pt. 3, S.H. 5148; Windsor Village: Main Street S.H. 1239 Proj. F-FG-344 (25)	6 31 (4 77 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 6.16 Mi. (Access = 1.17 Mi. Cem. Conc. Pavt., 0.41 Mi. Asp. Conc. Pavt., 2.04 Mi. Bit. Surf. Treat. & 0.95 Mi. Gran. Mat.) Bit. Surf. Treatment = 0.15 Mi. 8 Hy. Seps. Comp. Beams 131.4', 137.8', 123.6', 128.8', 192', 192', 139.5' and 147.8'; 2 RR Seps. Comp. Beams 224.7' and 249.7'; 7 Brs. Comp. Beams 139', 167', 105', 545', 545', 423.8' and 514'; 1 Br. Reinf. Conc. Box 23.4'	$550,000 Plans $10	$10,064,000
Chenango	FC 59-1	Newton Creek: Bainbridge Flood Control Project	0 49	Furnishing & Erecting 5' Chain Link Fence	$1,100 Plans $10	20,000
Sullivan (Rtes. 209, 42, 52 & 55)	R.C. 59-103	S.H. 8287; S.H. 1478; S.H. 1708; S.H. 8153; S.H. 8171; S.H. 8335; S.H. 1601; S.H. 1837; S.H. 50-10 and S.H. 700		Roadside Development	$700 Plans $5	13,000
DISTRICT No. 10, M. E. GOVE, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Suffolk	O.P. 59-1	Ocean Parkway (Gilgo St. Park to Captree St. Parkway)	7 14	Landscaping and Miscell. Work	$22,000 Plans $5	398,000
Suffolk	FASH 59-13	Sunrise Highway Extension (S.H. 1883 to Springdale Road) Proj. F-559(12)	3 98 (5 39 Acc.)	9" Cem. Conc. Pavt. (Carb. Black) 266 24' Var. Wide = 3.28 Mi.; Miscell. Work = 0.70 Mi. (Access = 0.91 Mi. Cem. Conc. & 4.48 Mi. Asp. Conc.); 4 Hy. Seps. Comp. W-F Beams 3 Sp. 166', 3 Sp. 160.5', 3 Sp. 116.6', and 4 Sp. 239.4', 1 Hy. Sep. Plate Girder, 3 Sp. 199.7'	$220,000 Plans $5	4,016,000
Suffolk (Rte. 110)	FARC 59-10	Amityville Village: Broadway, S. H. 1633 Huntington-Amityville Pt. 2, S.H. 1219 Proj. U-297(5)	2 16	Asphalt Concrete Pavement = 2.10 Mi. Miscell. Work = 0.06 Mi.	$79,000 Plans $5	1,444,000
	Total 24 Contracts (23 Hy. and 1 Canal)		89 42			$38,210,600

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: August 4, 1959

Power Authority of The State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF GENERATOR HATCH COVERS FOR LEWISTON POWER PLANT
SPECIFICATION NO. PA-N-23024
NIAGARA CONTRACT NO. NP 38

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the Furnishing and Delivery thereof, F.O.B. University Siding, Lewiston Power Plant Area, Niagara Falls, New York, for Thirteen (13) Two-Section, Mobile, Unit Hatch Covers for the Lewiston Power Plant in Lewiston, Niagara County, New York until 10:30 A.M. Eastern Daylight Saving Time on the 4th Day of August, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for furnishing and delivery of thirteen (13) Hatch Covers complete with appurtenances for the thirteen (13) Unit Generators for the Lewiston Power Plant. The total weight of the Hatch Covers is approximately 420 Tons. Erection at the site of installation will be done by others. First delivery will be required April 15, 1960.

All work shall be completed on or before January 1, 1961.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars, per initial set of contract documents, and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-23024

Bids: August 18, 1959.

Clearing and Grubbing Charlotteburg Reservoir Contract—CRP-7

OFFICE OF THE DIRECTOR OF THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF NEWARK, NEW JERSEY
City Hall, Newark, N. J.
Date: July 22, 1959

Job No. 4167 Division of Water Supply

Sealed Proposals will be received at 10:00 A. M. Eastern Daylight Saving Time on Tuesday, August 18, 1959, by the Director of the Department of Public Works in Room 309, City Hall, Newark, New Jersey, and then and there at 10:00 A. M. publicly opened and read for the following work which is a part of the Charlotteburg Reservoir Project:

CLEARING AND GRUBBING,
CONTRACT CRP-7

The work to be done under this Contract involves clearing and grubbing and other related work in the Charlotteburg Reservoir area in preparation for the storage of water. The work is located in the Pequannock Watershed in Morris and Passaic Counties, approximately 25 miles northwesterly from the corporate limits of The City of Newark, in the general vicinity of New Jersey State Highway Route No. 23.

The Drawings, Specifications, Instructions and Information for Bidders, the Bid or Proposal, Contract and Bond forms are on file and may be seen at the office of the Division Engineer, Division of Water Supply, Department of Public Works, Room 101, City Hall Annex, Newark, and at the office of Parsons, Brinckerhoff, Hall & Macdonald, Engineers, Hydraulic & Sanitary Department, Room 2432, 165 Broadway, New York, New York. Copies may be obtained at the office of Parsons, Brinckerhoff, Hall & Macdonald upon deposit of twenty-five dollars, which sum will be refunded upon return of the Drawings and Specifications in good condition within 30 days after the opening of Bids or upon submittal of a formal Bid.

An Agreement of Surety signed by a Surety Company authorized to do business in New Jersey shall accompany each Proposal for execution of Contract on award thereof. Said Agreement of Surety shall be in conformity with the requirements specified in Instructions and Information for Bidders.

The Contract will be awarded to the lowest responsible bidder. The City reserves the right to reject any and all Bids or waive informalities therein.

All Proposals are subject to the requirements of all laws and City ordinances affecting same. The Bidder's attention is called to Section 2.58 of the City Administrative Code.

By direction of the Director of the Department of Public Works of The City of Newark.

George W. Andress
Director, Department of Public Works

Bids: September 1st, 1959

Ashland Relief Sewer Sections I, II and III Department of Public Works City of Detroit, Michigan Contracts PW-3050-51-52

Sealed proposals for the Ashland Relief Sewer will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit time, September 1, 1959, and then at such place and time publicly opened and read aloud.

The work is separated into three contracts, namely PW-3050, PW-3051, and PW-3052, covering Sections I, II, and III, respectively. Bidders may bid on each Contract separately or may submit a bid on any combination of two or a combined bid for all three Contracts. All three sections are to be constructed simultaneously, regardless of the method of combining contracts.

Contract PW-3050 (Section I) consists of approximately two miles of 15'-3" inside diameter plain concrete sewer to be built in tunnel under Lakewood, Frankfort, and Chalmers from Kercheval to Harper.

Contract PW-3051 (Section II) consists of approximately 1.1 miles of 13'-6" inside diameter and 1.1 miles of 12'-9" inside diameter plain concrete sewer to be built in tunnel under Chalmers and Queen from Harper to Seven Mile.

Contract PW-3052 (Section III) consists of approximately 3.15 miles of plain concrete sewer varying in inside diameter from 11'-6" to 9'-6" to be built in tunnel and some 0.37 miles of 6'-3" inside diameter sewer also to be built in tunnel of either plain concrete or brick under Queen and Lappin from Seven Mile to Annott.

The Bidding Documents which must be used in submitting a proposal may be examined at the Office of the City Engineer during regular business hours and copies may be obtained upon deposit of $25.00 per set, which deposit will be refunded upon the return of the Bidding Documents in good condition within 10 days after the date for opening bids or if used in submitting a proposal.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

Bids: August 28, 1959

Construction of Contract No. 3—Sewage Treatment Plant

Sealed bids will be received by the City of Struthers, Mahoning County, Ohio at the office of the Director of Public Service and Safety, until twelve (12:00) o'clock noon (Eastern Standard Time) August 28, 1959, at which time they will be publicly opened and read aloud for the construction of

CONTRACT NO. 3—
SEWAGE TREATMENT PLANT

The proposed work designated as Contract No. 3, Sewage Treatment Plant, consists of the construction of a complete primary treatment plant consisting of the main building, preaeration and grit removal tanks, primary tanks, digestion tanks and control building, sludge holding tank together with all necessary piping, mechanical equipment and all appurtenances.

Contract No. 3 shall be completed in four hundred (400) consecutive calendar days.

The work under Contract No. 3 is generally located on City owned property just north of the Struthers-Lowellville Road at the eastern corporation limits.

Copies of plans and specifications and blank proposals may be obtained or examined at the office of the Director of Public Service and Safety, City Hall, Struthers, Ohio. Copies of plans, specifications and blank proposals may be examined at the office of Floyd G. Browne and Associates, Consulting Engineers, 125 West Church Street, Marion, Ohio, after July 16, 1959. Payment in the amount of thirty ($30.00) dollars will be required for each set of plans and specifications taken from the above office. Check in payment for plans and specifications shall be made payable to the City of Struthers, Ohio. The full amount of deposit for plans and specifications will be refunded upon return of same in good condition within forty-five (45) days of the bid opening date.

Each proposal shall contain the full name and address of the party, or parties, making the same and all persons interested therein, and shall be accompanied by a certified check, bid bond or draft on a solvent bank in the sum of five (5%) percent of the amount bid and made payable to the City of Struthers, Ohio, or by a proposal bond signed by a surety company authorized to do business in Ohio, as a guarantee that if the bid be accepted a contract will be entered into and the performance of it properly secured by a one hundred (100%) percent performance bond.

No proposal will be entertained unless made on the blanks attached to the bound document and furnished by the City or Engineer, previous to twelve (12:00) o'clock noon, (Eastern Standard Time) on the day specified. Any bid received after this time will be returned unopened to the bidder.

The bidder's attention is directed to the necessity of starting the work at once upon written notice to proceed as time is an important element in this contract.

Attention of the bidder is called to the special construction regulations which are included in the specifications, to the special requirements for procurement of labor, wage rates, hours of employment as provided by the Revised Code of the State of Ohio relative to the wages and hours on public works, and to special information given in "INSTRUCTION TO BIDDERS."

Attention of the bidder is directed to this important provision, namely: "that the general conditions provide that penalties can and will be invoked in the event the contract is not completed on time or by reason of delays which may bring about additional expenses, expenditures and costs".

Attention is directed to the bidder that the City of Struthers, Ohio must be fully protected against any claims for property damage or personal injuries resulting during the course of the performance of any work embraced in this contract.

No bidder may withdraw his bid for a period of forty-five (45) days after the time of opening bids.

The City of Struthers reserves the right to reject any and all bids, waive informalities or irregularities in the bids received, and to accept the lowest and best bid.

CITY OF STRUTHERS, OHIO
BY Frank J. Vinch
DIRECTOR OF PUBLIC
SERVICE & SAFETY

U. S. Government

FEDERAL AVIATION AGENCY. Sealed bids (Invitation No. 6-3082B1) will be received at Washington, D. C., until 2:00 p.m., EDST, Wednesday, August 12, 1959, for furnishing, delivery, erection, testing and supervision of startup of two (2) high temperature water boilers with fuel burning equipment; two (2) centrifugal refrigeration machines; and one (1) cooling tower, all complete with accessories, in connection with the development of the Washington International Airport in Fairfax and Loudoun Counties, Virginia. Bid forms and specifications may be obtained from the Procurement Branch, Federal Aviation Agency, Room 2615, T-5 Building, Washington 25, D. C. No deposit will be required.

Bids: August 28, 1959.

Construction of Intercepting Sanitary Sewers and Lift Stations

Contract No. 2A

Main Intercepting Sewer and Plant Outfall Sewer.

Contract No. 2B

Yellow Creek Diversion Sewer and Force Main, and the Bridge Street Intercepting Sewer and Lift Station.

Contract No. 2C

State Street Intercepting Sewer, Lift Station and Force Main, and Lower Broad Street Lift Station and Force Main.

Sealed bids will be received by the City of Struthers, Mahoning County, Ohio, at the office of the Director of Public Service and Safety until twelve (12:00) o'clock noon (Eastern Standard Time), *August 28, 1959*, and then publicly opened and read aloud for the construction of

INTERCEPTING SANITARY SEWERS AND LIFT STATIONS

Contract No. 2A

Main Intercepting Sewer and Plant Outfall Sewer.

Contract No. 2B

Yellow Creek Diversion Sewer and Force Main, and the Bridge Street Intercepting Sewer and Lift Station.

Contract No. 2C

State Street Intercepting Sewer, Lift Station and Force Main, and Lower Broad Street Lift Station and Force Main.

The proposed work designated as Contract No. 2A, Main Intercepting Sewer and Plant Outfall Sewer, consists of the construction of approximately 202 lineal feet of 48-inch diameter; 2,650 lineal feet of 36-inch diameter; 130 lineal feet of 30-inch diameter reinforced concrete pipe; 1,260 lineal feet of 24-inch diameter, 2,110 lineal feet of 21-inch diameter, vitrified sewer pipe; 440 lineal feet of 36-inch diameter, 105 lineal feet of 24-inch diameter corrugated metal pipe; 2,380 lineal feet of 24-inch diameter and 2,380 lineal feet of 12-inch diameter cast iron pipe, and also the construction of all stream crossings, sewers in tunnel, manholes, special structures, pipe encasement and all necessary appurtenances.

The work under Contract No. 2A, Main Intercepting Sewer and Plant Outfall Sewer is located as follows:

The main intercepting sewer starts at a point approximately 330 feet east of Panther Creek and south of Lowellville Road and extends northwesterly parallel to and in Lowellville Road to the Yellow Creek Park; thence diagonally across the Park to Poland Avenue; thence across private property in a westerly direction to an alley between Hawthorne and Stewart Streets; thence northerly in the alley to the alley south of Elm Street; thence in a westerly direction in said alley to Elm Street, and continuing in a westerly direction in Elm Street to the intersection of Elm and Garfield Streets.

The plant outfall sewer parallels the main intercepting sewer to Panther Creek. Only the portion right of Stations 4+62 through 8+00 and the temporary bypass are included in the work.

The work under Contract No. 2A, Main Intercepting Sewer and Plant Outfall Sewer shall be completed in 300 consecutive calendar days.

The proposed work designated as Contract No. 2B, Yellow Creek Diversion Sewer and Force Main and the Bridge Street Intercepting Sewer and Lift Stations, consists of the construction of approximately 30 lineal feet of 21-inch diameter, 740 lineal feet of 18-inch diameter, 265 lineal feet of 15-inch diameter, 450 lineal feet of 12-inch diameter vitrified sewer pipe; 1,650 lineal feet of 18-inch diameter, 540 lineal feet of 10-inch diameter cast iron pipe; 410 lineal feet of 10-inch diameter steel pipe; two lift stations and two regulators, and also the construction of all creek crossings, river crossing, sewers in tunnel, special structures, pipe encasement, manholes, railroad crossings and all necessary appurtenances.

The work under Contract No. 2B, Yellow Creek Diversion Sewer and Force Main and the Bridge Street Intercepting Sewer and Lift Stations is located as follows:

The Yellow Creek Diversion Sewer and Force Main starts at the lift station on Bridge Street and extends in a southeasterly direction in the alley opposite Union Street to the alley east of Bridge Street; thence in a southwesterly direction in the alley east of Bridge Street to a point south of Main Street; thence diagonally across private property in a southeasterly direction to Yellow Creek and thence upstream in the bed of Yellow Creek to a connection with the main intercepting sewer;

The Bridge Street Intercepting Sewer and Lift Stations starts at the lift station on Bridge Street and extends in a northeasterly direction parallel to Bridge Street, across the Mahoning River over the existing bridge to Broad Street; thence in a northwesterly direction in Broad Street to the Broad Street lift station.

The work under Contract No. 2B, Yellow Creek Diversion Sewer and Force Main and the Bridge Street Intercepting Sewer and Lift Station shall be completed in 170 consecutive calendar days.

The proposed work designated as Contract No. 2C, State Street Intercepting Sewer, Lift Station and Force Main, and the Lower Broad Street Lift Station and Force Main consists of the construction of approximately 12 lineal feet of 15-inch diameter, 1,150 lineal feet of 12-inch diameter, 15 lineal feet of 10-inch diameter vitrified sewer pipe; 840 lineal feet of 10-inch diameter, 1,280 lineal feet of 8-inch diameter cast iron pipe; two lift stations and one regulator, and also the construction of all manholes, special structures, pipe encasement and all necessary appurtenances.

The work under Contract No. 2C, State Street Intercepting Sewer, Lift Station and Force Main, and the Lower Broad Street Lift Station and Force Main is located as follows:

The State Street Intercepting Sewer, Lift Station and Force Main starts at a point 20 feet north of an existing manhole on the existing outfall sewer for County District No. 4. The existing manhole is approximately 250 feet southwest of State Street. The line then extends in an easterly direction to the north side of State Street; thence in the north side of State Street in a southeasterly direction to an existing manhole at Moore and State Streets.

The Lower Broad Street Lift Station and Force Main starts at an existing manhole at Broad and Harding Streets and extends in an easterly direction to the proposed Lower Broad Street Lift station.

All work under Contract No. 2C, State Street Intercepting Sewer, Lift Station and Force Main and the Lower Broad Street Lift Station and Force Main shall be completed in 130 consecutive calendar days.

The work under Contracts No. 2A, 2B and 2C is generally located in streets or alleys, or on private property for which easements have been secured for the purpose, or on property owned by the City.

Copies of the plans and specifications and blank proposals may be obtained or examined at the office of the Director of Public Service and Safety, City Hall, Struthers, Ohio. Copies of plans, specifications and blank proposals may be examined at the office of Floyd G. Browne and Associates, Consulting Engineers, 125 West Church Street, Marion, Ohio, after *July 16, 1959*. Payment in the amount of twenty-five ($25.00) dollars will be required for each set of plans and specifications taken from the above office. Check in payment for plans and specifications shall be made payable to the City of Struthers, Ohio. The full amount of deposit for plans and specifications will be refunded upon return of same in good condition within forty-five (45) days of the bid opening date.

Each proposal shall contain the full name and address of the party, or parties, making the same and all persons interested therein, and shall be accompanied by a certified check, bid bond or draft on a solvent bank in the sum of five (5%) percent of the amount bid and made payable to the City of Struthers, Ohio, or by a proposal bond signed by a surety company authorized to do business in Ohio, as a guarantee that if the bid be accepted a contract will be entered into and the performance of it properly secured by a one hundred (100%) percent performance bond.

No proposal will be entertained unless made on the blanks attached to the bound document and furnished by the City or Engineer, previous to twelve (12:00) o'clock noon, (eastern Standard Time) on the day specified. Any bid received after this time will be returned unopened to the bidder.

The bidder's attention is directed to the necessity of starting the work at once upon written notice to proceed as time is an important element in this contract.

Attention of the bidder is called to the special construction regulations which are included in the specifications to the special requirements for procurement of labor, wage rates, hours of employment as provided by the Revised Code of the State of Ohio relative to the wages and hours on public works, and to special information given in "*INSTRUCTION TO BIDDERS*".

Attention of the bidder is directed to this important provision, namely: "that the general conditions provide that penalties can and will be invoked in the event the contract is not completed on time or by reason of delays which may bring about additional expenses, expenditures and costs".

Attention is directed to the bidder that the City of Struthers, Ohio must be fully protected against any claims for property damage or personal injuries resulting during the course of the performance of any work embraced in this contract.

No bidder may withdraw his bid for a period of forty-five (45) days after the time of opening bids.

The City of Struthers reserves the right to reject any and all bids, waive informalities or irregularities in the bids received, and to accept the lowest and best bid.

CITY OF STRUTHERS, OHIO

By Frank J. Ancil

DIRECTOR OF PUBLIC SERVICE & SAFETY

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

AUG. 13TH ISSUE CLOSES JULY 27TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

PROJECT MANAGER

HEAVY EARTHWORK

UNITED STATES

Graduate Engineer under 40 years of age. Background must include detailed knowledge of the correct operation, maintenance and repair of all types of heavy earth moving equipment. Experience required in Rock and Wet excavation including Scraper and Long Haul operation. Excellent opportunity for man with the above qualifications and proven administrative ability. Send detailed resume of experience and references to

P-2041 Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

STATE OF SOUTH DAKOTA
Engineering Opportunities

Openings in the State Engineer's office present permanent opportunities for recent engineering graduates and experienced engineers in the following classifications and salary brackets:

Deputy State Engineer (ME)	$9,300
Electrical Engineer	$8,400
Architectural Draftsman	$7,200
Inspector, Grade II	$6,000
Inspector, Grade I	$5,000

Benefits include sick leave with pay, paid vacations, military leave with pay, available hospitalization plan.

• • •

Applicants send complete resume to: **Director of Employment, State Capitol, Pierre, South Dakota.**

ENGINEER—PUBLIC HEALTH

Man with formal education and diversified experience in Public Health Engineering to assume full responsibility for all phases of watershed control work, including administration of department and supervision of personnel.
Forward complete resume to Personnel Director.

HACKENSACK WATER COMPANY
4100 Park Avenue Weehawken, N. J.

DISTRIBUTOR AVAILABLE

DISTRIBUTOR OF COMPLETE LINE HEAVY DUTY TRUCK AND TRACK MOUNTED EXCAVATORS IN NEW YORK CITY AREA INTERESTED TAKING ON ADDITIONAL EQUIPMENT USED BY HEAVY CONSTRUCTION INDUSTRY—

RA-2115, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ELECTRICAL DESIGNER

Require man experienced in designing conduit plans, cable systems, physical layouts, wiring diagrams, lighting systems, and other electrical features of hydroelectric powerplant design. Board work. Send resume to Mr. James E. Collins, Personnel Manager.

HARZA ENGINEERING COMPANY
400 W. Madison Street Chicago 6, Illinois

DESIGN ENGINEER

Graduate Civil Engineer to do detailed design work involving street paving and/or sanitary sewer projects.

Letter of application with complete resume and minimum salary should be made to Department of Personnel, City Hall, Springfield, Missouri.

HIGHWAY ENGINEERS
BRIDGE ENGINEERS
SANITARY ENGINEERS
DESIGNERS & DRAFTSMEN

Send Resume to
WIGHT AND COMPANY
Consulting Engineers
1038 Curtiss Street Downers Grove, Illinois

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Experienced Estimator wanted by West Coast firm engaged in General Construction of Commercial and Industrial work. Permanent position. Salary open to right man. Registered Engineer preferred. Send complete resume stating expected salary. P-1889, Engineering New-Record.

Design Engineers: 25 to 50 years. Graduate. registered. Thorough experience required in all phases of detailed design and estimating for municipal construction projects, particularly storm and sanitary sewers. $7075 to $8410. Qualified graduates considered for Jr. Design Engineers, promotion following registration. $6365 to $7717. Permanent with automatic advancement; bi-weekly salary; paid vacation; sick leave; excellent retirement plan. Submit detailed resume of education, background, experience, references, and date of availability to: Director of Public Service, City of Middletown, Ohio, P. O. Box 530.

Structural Engineer with pleasing personality plus structural design or construction experience for promotional and client contact in eastern United States. Prior client contact experience not required though desirable. Salary open. Send detailed resume to Buchart Engineering Corp., York, Penna.

• POSITIONS VACANT

Wanted: Heavy Construction Project Manager. Minimum of 15 years experience in the U.S.A. Permanent Position. Salary open for the right man. Company doing business through the U.S.A. P-2135, Engineering News-Record.

Civil Engineer with experience in sanitary design work. Needed immediately. Established consultant in Ohio. Give resume and salary requirements. P-2092, Engineering News-Record.

Civil Engineer: Registered C.E. capable of organizing and running a consulting firm. Opportunity to become a principal. Location Maryland. P-2124, Engineering News-Record.

Estimator—Top pay and working conditions for a fully experienced productive competitive estimator. Wingate Construction Company, 34 17th St., Phila. 3, Pa.

Asst. Prof.—To teach undergrad. courses in transportation, surveying, and fluid mechanics. Salary open. Civil Eng., University of No. Dak., Grand Forks.

Construction Superintendent experienced in all phases of large building projects. Submit detailed resume of experience and salary desired. Reply P. O. Box 307, Port Chester, New York.

Superintendent of construction for new institutional building on Long Island. Not over 45 years of age. Must be a producer and cost conscious. All trades including mechanical. Reply to P-2141, Engineering News-Record.

Civil Engineer—A leading upstate New York employer offers a challenging opportunity to assist in a professional program involving personnel selection for positions in the field of engineering. We are looking for a man with a bachelor's degree in civil engineering, a P.E. license issued by New York State or an equivalent license issued by another state and who, in addition, has at least three years of professional engineering experience, or teaching engineering subjects in a recognized college, or an equivalent of the above. Beginning salary for this five day, 37½ hour week is $7818 with guaranteed increases each year. In addition there are many fringe benefits. We are anxious to fill this vacancy as soon as possible. If time and circumstances permit candidates may be granted personal interviews in New York City, Boston, Albany, N. Y. or other upstate New York cities. All qualified applicants are invited to send a complete and detailed resume and experience to P. O. Box 1624, Albany, N. Y.

Manager for reinforcing steel, engineering, blueprinting, fabricating and shipping operation. Experience necessary plus construction knowledge. Western states—small company. P-2158, Engineering News-Record.

National Limestone Institute has challenging position for engineer with background in highway field. Excellent growth potential. Send complete resume with salary requirements to N. L. I. 1015-12th St. N.W., Wash. D. C.

Wanted: Construction superintendent experienced in bridge work and sewage treatment plant construction. Salary based on experience and ability. New England area. P-2172, Engineering News-Record.

Openings for Engineer-Job supt. and for estimator, central Illinois contractor (industrial-commercial). Profit sharing, bright future. Give education, experience, salary in reply. J. L. Wrosn and Sons, Inc., Normal, Illinois.

(Continued on page 83)

Employment opportunities

OVERSEAS DESIGN ENGINEERS

ONE CIVIL & STRUCTURAL
ONE MECHANICAL
on
CONCRETE ARCH DAM
POWER PLANT
and
TRANSMISSION
SYSTEM

Men with degree and substantial applicable experience required to head design sections in Bangkok, Thailand. Must pass physical examination.

- 20-MONTH CONTRACT
- BASE SALARY
- OVERSEAS DIFFERENTIAL
- COMPLETION BONUS
- VACATION ALLOWANCE
- FAMILY QUARTERS
- FAMILY TRANSPORT OVERSEAS
- INSURANCE AND MEDICAL CARE

Send complete resume of education and experience, including salary information and date available to:

ENGINEERING CONSULTANTS INC.
1940 W. MISSISSIPPI AVE.
DENVER 23, COLORADO

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

• POSITIONS VACANT
(Continued from page 82)

Engineer-Estimator: B. S. in Civil Engr.—age 25-35 with at least 5 years experience in Heavy and/or Building construction. Send resume and salary desired to The Hunkin-Conkey Construction Co., 1740 East 12th St., Cleveland, Ohio.

Construction Manager—Growing General Construction firm located Northeast U. S. offers unusual opportunity to General Manager of experience and maturity. Applicant must have substantial background, both managerial and field in all types of building construction with proven background and labor relations, job coordinator, construction cost and profit making. Preferred age between 40 and 45 yrs. Firm is fully staffed. Present annual volume $12,000,000 to $15,000,000 and growing. Salary will be substantial with probable bonus. Participation in group life insurance, hospitalization and approved profit sharing plan. Apply only if fully qualified and deserving of high salaried position. Reply with full resume and expected salary to P-2118, Engineering News-Record.

Construction Superintendent — Immediate opening for man of large experience as construction superintendent and administrator for erection of medical science building costing approximately $2,500,000. This is first phase of large college building program. Salary open. Company offers additional employee benefits of group life insurance, hospitalization and profit sharing plan. Reply with full particulars as to background, experience and expected salary to P-2122, Engineering News-Record.

Civil Engineer—Registered or able to obtain registration in Ohio. With three years of experience in structures, highway and sewer work. Starting salary up to $8200, plus benefits, depending upon experience. Apply: City Engineer, 500 Municipal Bldg., Dayton 2, Ohio.

Mechanical Design Engineer: Pulp and Paper Mill machinery and equipment design. Equipment and material selection, specifications and layout. Minimum 8 years' design experience, preferably in the pulp and paper industry. Engineering degree required. Scenic Middle-Atlantic States location. Excellent opportunity. Salary commensurate with ability. P-1810, Engineering News-Record.

Your Inquiries to Advertisers Will Have Special Value . . .

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publisher to secure more advertisers and —more advertisers mean more information on more products or better service—more value—to YOU.

• POSITIONS WANTED

Civil Engineer, 26, married, very interested in earth and rock excavating equipment desires challenging job with contractor, equipment dealer or manufacturer. Since graduation in 1955, worked 6 months as equipment operator, 3 years in construction branch of Fed. Gov. on highway, tunnel, and channel improvement jobs and 6 months with Fed. Gov. making time studies of equipment performance. Will relocate—available on 3 weeks notice—resume on request. PW-2055, Engineering News-Record.

Rock Supt. or Asst. Supt. on heavy construction. 25 years experience. Will travel. Available now. PW-2014, Engineering News-Record.

• POSITIONS WANTED

Heavy Equipment Supervisor, age 35, 17 yrs exp. dams, power plant, roads, preventive maint. Resume upon request. John C. Melton, Birdsong Road, Camden, Tennessee, Pho. LU 4-7901.

Mechanical engineer or designer; over twenty years diversified field and office experience, including supervision. Process, power, and other. Prefer field assignment, but office acceptable. Bob Mills, 219 N. Jefferson, Kittanning, Penna.

Heavy Construction Superintendent 18 years experience dock construction, pile driving, bridges and dams desires position with responsibility and future. PW-2137, Engineering News-Record.

Civil Engineer, MCE, 35, Registered, with wide experience in supervision of major hiway, airport and earthfill dam projects seeks position with engineer or contractor, domestic or foreign. Fluent Spanish. PW-2104, Engineering News-Record.

Construction engineer, 32, for heavy construction in West. Assist. Supt. layout work, engineer experienced in design, construction, and detailing for Reinforced concrete and pre-cast concrete. Available August. PW-2101, Engineering News-Record.

Foreign or Domestic—Top level tunnel superintendent. Age 46—background of successful tunnels, shaft's, caissons, underground powerhouses, well versed cost wise, can get top production—help estimate. Resume on request. PW-2001, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Land Surveyor, 31, eleven yrs. exp. all phases survey and field engr., incl. one yr. self-emp. Reg. in three States. PW-2151, Engineering News-Record.

Civil Engineer 35, B.S.C.E. Reg. Prof. Eng. in Penna. and Delaware. Mem. A.S.C.E. 10 yrs. Gen. Eng. experience including field engineer, design, and estimating with consultant and contractor in highways, bridges, and buildings. Desires position with consultant or contractor in design, administrative, and/or estimating within 50 mi. radius of Phila., Penna. PW-2149, Engineering News-Record.

Field Superintendent for construction of sewers, water, grading and concrete jobs. Age 47, no college degree, 24 years practical experience, ability to complete jobs from start to finish. Salary open. PW-2150, Engineering News-Record.

Foreman or general foreman—20 years experience in sewer and water lines, also asphalt or concrete paving. Reliable and good producer. Available immediately. PW-2146, Engineering News-Record.

Civil Engineer, 28, seven years construction field & office experience, seeks opportunity in construction products line, N. Y.-N. J., sales, service, office. PW-2154, Engineering News-Record.

Project-manager, 20 years heavy construction. Top production. U. S. and foreign. PW-2163, Engineering News-Record.

Construction Superintendent B.S.C.E. Hvy. earthwork, highways, flood control, 15 yrs. exp. bidding, estimating, supervising, now employed east, prefer west coast. PW-2167, Engineering News-Record.

Project Manager or general superintendent, fully experienced in all phases of heavy construction, bridges, cofferdams, caissons, all types pile. Mass rock and earth excavation, throughways, railroad construction. Availability-immediately. Will relocate. Q. L. (Blackie) Ballard, 5120 Indiana St., So. Charleston, West Va. Phone, Poplar 8-1058.

Civil Engr.—B.S.C.E., '50 6 yrs. exp. precise surveys—plane & geodetic, field & office, domestic & O.S. Speak Spanish and Portuguese. Latin American preferred. PW-2170, Engineering News-Record.

Transitman, Rodman, Field Clerk, New York City, Northern New Jersey Available 4 years experience heavy & light construction work. PW-2174, Engineering News-Record.

Engineer, mid-thirties, substantial experience in construction and management, desires position with small contracting firm. Willing to purchase interest. PW-2175, Engineering News-Record.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

FOR ADDITIONAL INFORMATION

About Classified Advertising

Contact The McGraw-Hill Office Nearest You

ATLANTA, 3—1301 Rhodes-Haverty Bldg.
JAckson 3-6951
D. BILLIAN

BOSTON, 16—350 Park Square
HUbbard 2-7160
D. J. CASSIDY

CHICAGO, 11—520 No. Michigan Ave.
MOhawk 4-5800
W. J. HIGGENS · E. S. MOORE

CLEVELAND, 13—1164 Illuminating Bldg.
SUperior 1-7000
W. B. SULLIVAN · T. H. HUNTER

DALLAS, 1—1712 Commerce St., Vaughn Bldg.
RIverside 7-5117
GORDON JONES · F. E. HOLLAND

DETROIT, 26—856 Penobscot Bldg.
WOodward 2-1793
J. R. PIERCE

LOS ANGELES, 17—1125 W. 6 St.
HUntley 2-5450
P. M. BUTTS

NEW YORK, 63—500 Fifth Ave.
OXford 5-5959
H. T. BUCHANAN · R. P. LAWLESS

PHILADELPHIA, 3—Six Penn Center Plaza
LOcust 8-4330
H. W. BOZARTH · T. W. McCLURE

ST. LOUIS, 8—3615 Olive St.
JEfferson 5-4867

SAN FRANCISCO, 4—68 Post St.
DOuglas 2-4600
S. HUBBARD

U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR139 Simpson, Pa.

FOR SALE

48B Bucyrus Erie Shovel, diesel 2½ c.y.
3540' 9" x 9" road forms
1800' 11" x 13" airport forms
2500' 16" x 12" airport forms

WILLIAMS CONSTRUCTION COMPANY
Box 5045 Balto. 20, Md. Murdock 6-1000

FOR SALE—CRANES, COMPRESSORS, BUCKETS & BULLDOZERS—*like new*

These pieces were purchased new by the Lukens Steel Company of Coatesville, Pa. less than 22 months ago and have been professionally operated and maintained since that time:

50 Ton Lima Model 703 SC Crawler Crane, Cummins HIS Diesel Engine, 30 KW Magnet Generator Set, 100' Boom, 15' JIB

25 Ton Lima Model 34 W Wagon Crane, Cummins JIPS Diesel Engine, 60' Boom, 15' JIB, 20 KW Generator Set

600 Cu. Ft. Worthington Blue Brute Air Compressor mounted on four (4) Pneumatic Tired Wheels, GM Model 6-71 Engine

315 Cu. Ft. Worthington Blue Brute Air Compressor mounted on four (4) Pneumatic Tired Wheels, NHC-400 Cummins Engine

HD-11 Allis Chalmers Hydraulic Bulldozer with 7'4" Blade and AC 94 H.P. Diesel Engine

1½ Cu. Yd. Wellman Williams Clamshell Bucket MF 40M

¾ Cu. Yd. Wellman Williams Clamshell Bucket MF 19M

1 Cu. Yd. Blaw-Knox Model R-31 Concrete Bucket, Roller Gate Type

For further information, contact

W. A. BURNHAM of Lukens' Purchasing Department, Coatesville, 2000, Extension 223.

LUKENS

FOR SALE

2—Manitowoc Model 3500 Lift-crane
1—Manitowoc Model 3900 Lift-crane
1—Lima Model 802 Dragline

MANITOWOC-FORSYTHE CORPORATION
37-11 Vernon Blvd.—*EXeter 2-6725*
Long Island City 1, New York

WANTED
1—16" Hydraulic DREDGE PUMP

State condition, spares available, make, type and price.

W-2119, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FOR SALE

One Model M7 Mixer-mobile

Chrysler Industrial Engine
Hydraulic Hoisting Control Devices

GENERAL ROOFING COMPANY
Route 519 Bridgeville, Pa.
Locust 1-8005

FOR SALE
VERY LOW PRICE
Steel Forms for Tunnel or Culvert
Manufactured by Blaw-Knox Co.

2 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube
4 Exterior forms 40' long x 18' high

4 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for twin tube
2 Exterior forms 40' long x 18' high
Also steel forms for air duct and walkway

All located New Orleans, Louisiana
Contact J. S. Glazer
c/o GLAZER STEEL CORPORATION
1556 Tchoupitoulas St. New Orleans, La.
TELEPHONE: EXpress 2761

FOR RENT
CRAWLER CRANES
2—New 80-ton 3900 Manitowocs
TRUCK CRANES
2—60-ton Manitowocs
1—70-ton P&H
2—35-ton Link-Belts
All equipment in Like-New Condition
Located in all parts of U. S.

LEE CORPORATION
P. O. Box 253 Houston, Texas
WAlnut 3-5551

Complete 16 ft. Diameter Tunnel Spread

Concrete forms, 4", 6", 8", 24" Spiral Welded Pipe, Locomotives, Muck Cars, Tunnel Agitators, Pumps, Pumpcrete machines, etc. For information and catalogue, write or phone

WESTERN CONTRACTORS SUPPLY CO.
4817 Lake St., Melrose Park, Ill.
CO. 1-8875 FI. 5-0690

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• BUSINESS OPPORTUNITIES

Medium sized eastern Consulting Engineering firm is interested in expanding its operations in the United States by merger or purchase of an established engineering practice. BO-1991, Engineering News-Record.

Civil Engineer: Registered C.E. capable of organizing and running a consulting firm. Opportunity to become a principal. Location Maryland. BO-2127, Engineering News-Record.

FOR SALE

(7000 LF) Rex three-way airport forms 19" x 21" x 24" (3" steel buildup)
(1) Northwestern 95 Crane & Buckets
(2) Caterpillar D6 Loaders
(1) 34E Koehring Paver
(2) 34E Worthington Pavers
(1) Concut Concrete "Gang Saw"
(25) International (4) Batch Trucks
(1) Cedar Rapids Crusher (Commander)
(1) Triple Deck Lippman Vibrating Screen 5' x 16'

All located Sheppard Air Force Base, Wichita Falls, Texas

NOLAN BROS., INC.
P. O. Box 218 Wichita Falls, Texas

ATTENTION

Bridge Builders—Highway Contractors

FOR SALE OR LEASE

In Stock for Prompt Shipment
For Temporary or Permanent Use
11 Pcs. 36" WIDE FLANGE BEAMS
300# x 44' 47'

Also other heavy structural steel, beams, girders and bearing pile sections

ACORN IRON & SUPPLY CO.
915 N. Delaware Ave., Philadelphia 23, Pa.
WAlnut 2-7070

FOR SALE OR RENT

D-8 Tractor, Serial #14A1010. Oil Clutch & Hydraulic Track Adjusters. Cat. 8-S Blade. Undercarriage rebuilt. 3500 hrs. owner operated. Price $25,000.00.

Cat. Model 80 Scraper, Serial 5W475. Flat Bottom Excellent condition. Price $8,000.00.

Tractor & Scraper combined $31,500.00.

No. S Cat. Loader, good condition. Ser. #10A652. Price $13,000.00.

McCONACHY CONSTRUCTION CO.
BLAIRSTOWN, N. J.
Foxcroft 2-3894

FOR SALE

6—2 yd. war surplus Haiss heavy duty clamshell buckets. With teeth. 1½" bowl 3" lips. New 1954. Never used. Save 50%. SPECIAL PRICE ..... $3000.00 ea.

EQUIPMENT CORPORATION OF AMERICA
Box 43J, Groveton, Pa. (Suburb of Pittsburgh)

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Filotecnica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1913
210 S. Canal St. Chicago (6), Ill.

FOR SALE
LATE MODEL
EXCAVATING EQUIPMENT
EXCELLENT CONDITION

SHOVELS:
2—**Bucyrus-Erie 88-B** 4 yd. shovels. Cummins engines, torque converters, cab heaters, light plants. New Dec. 1958.
1—**Northwest 80-D** 2½ yd. shovel, Murphy engine, extended drum shaft, light plant. New Jan. 1959.

BULLDOZERS:
3—**Caterpillar D-8's**, cable control blade and DDPCU. New Nov.-Dec. 1958.
2—**Caterpillar D-8's**, cable control blade and DDPCU. New 1957.

EUCLID REAR DUMP TRUCKS:
7—**Model 65TD**, 27 ton std. bodies, 2 yd. extensions, 325 hp GMC engines. New Dec. 1958.
9—**Model 63TD**, 22 ton, GMC engines. New 1955-56.
2—**Model 36TD**, 22 ton, GMC engines. New Dec. 1955.

DRILLING EQUIPMENT:
4—**Gardner-Denver** air trac drills, model ATD 3000. New Dec. 1958.
1—**Ingersoll-Rand Barmaster**, model SCM6 with 4, D45 drifters, 24' quarry bar and $3000 new spare parts. New Feb. 1959.
4—**Foundation dust collectors**, model 4A. New Dec. 1958.

PORTABLE AIR COMPRESSORS:
1—**Gardner-Denver** 600 CFM—Diesel
1—**Schramm** 600 CFM—Diesel

TUSCARORA CONTRACTORS
P.O. Box 937, Falls Station
Niagara Falls, N. Y. *Phone Butler 4-0471*

TRENCH HOE ATTACHMENT

P & H, 655-B. Has 50" Bucket with Side Cutters to dig 68". Late Model.

$4000.00

Robert R. Anderson Co.
4550 W. Patterson, Chicago 41, Ill.

PIPE

Surplus New & Used
FOR SALE WANTED OR RENT

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

—PIPE—

500,000 ft 10¾" 40#
250,000 ft 8⅝" 28#
All machine cleaned, straight. Plain end, coated. Strictly No. 1. Pittsburgh Test Lab. report furnished. Immediate delivery.

INDIANA-OHIO PIPE CO.
P.O. Box 323, Phone 34674, Decatur, Ind.

8—⅝" O. D. NEW LINE PIPE

BELOW MILL

6728 feet of New Electricweld PRIME Grade A.P.I. Specification 5L, Grade B, .250 Wall, 22.36# Plain End Beveled, Double Random Lengths and Coated

Mfgd. by J. & L. Located Chicago, Ill.

M. R. BERLIN CO.
2900 West Peterson, Chicago 45, Ill. RO. 1-4348

FOR SALE

VERY LOW PRICE
4 All Steel Trusses

110' Long x 12' High

Capacity: 40 Tons Moving Load on Each Truss

Located New Orleans, Louisiana

Contact J. S. Glazer
c/o Glazer Steel Corporation
1556 Tchoupitoulas Street
New Orleans, Louisiana
Telephone: EXpress 2761

RAILS-TIES

TRACK ACCESSORIES

Rails, steel ties, splice and angle bars—whatever your needs, you are assured of rugged construction from quality steel when you specify "West Virginia." "One plant production" allows shipments in mixed carloads. For further information, contact Connors Steel Division, P. O. Box 316, Huntington, West Virginia.

CONNORS STEEL DIVISION

PORTER

H.K. PORTER COMPANY, INC.

RAILS
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W.VA.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.
DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

FOR SALE—Very Reasonable
One (1) Lorain Shovel Front, 1¼ Yd.
LOUIS ARGENIO, INC.
P.O. Box 2068, Newburgh, N. Y.
Tel. 5102-5103

FOR SALE
Blaw Knox Dual Drum 34-E Paver
Powered with 671 GMC Diesel Engine. S/N 46D704 New 1954. Has not worked since 1957. Located in Southeast.
FS-2040, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

"FASTER FROM FOSTER"

PIPE
1/8" to 48"
VALVES AND FITTINGS

RAIL
TOOLS • TRACK ACCESSORIES

STEEL PILING
STEEL-SHEET PILING • H-PILE • PIPE PILE

NEW YORK • CHICAGO • PITTSBURGH
HOUSTON • ATLANTA • LOS ANGELES

L. B. FOSTER Co.

We do a Nation-wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT
815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
103 pcs. 60 ft. MZ-27—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 30 ft. M-16 & M-115—Tennessee
370 pcs. 60 to 30 ft. M-15 & M-116—Indiana
150 pcs. 34-30 ft. M-116—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri
Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT
VULCAN AND McKIERNAN-TERRY
PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

H-Bearing Pile Sections
Immediate Shipment

74 Pcs. 10" BP 42# x 50'/65'
55 Pcs. 12" BP 53# x 55'/65'
20 Pcs. 12" BP 74# x 30'/40'
16 Pcs. 12" BP 74# x 45'/60'
5 Pcs. 12" BP 74# x 70'0"
15 Pcs. 14" BP 73# x 25/40'
6 Pcs. 14" BP 102# x 28'/40'
6 Pcs. 14" BP 102# x 54'/5"

WF-H-Beams up to 36" 300#

ACORN IRON & SUPPLY CO.
915 N. Delaware Ave. Philadelphia, 23, Pa.
WAlnut 2-7070

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 56' & 48' & 40' & 35'
450 PCS. MP112—12', 25', 35', 40' & 60'
850 PCS. BETH.—AP3 20', 25', 30', 35' & 60'
790 PCS. BETH.—DP2—31' 35' 40' 50' 60'
1200 PCS. ZP38-ZP32—25' 35' 50' 60' & 65'
1300 PCS. BP10 BP12—BP14—55' to 60'
400 PCS. BETH. ZP27—25', 30', 35' & 40'

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
CLEVELAND—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVE
12—Gen. Elec. 100, 80, 65, 45 & 25 ton
25 Ton New Whitcomb Diesel Elec.

5 WHIRLEY CRANES
4—50 Ton Elec. 150' Boom 85' Gantry
2—50 Ton, 1—28 Ton 100' Boom, Steam

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone MU-2-3075 or MU-2-1898

UNTREATED
• TREMENDOUS STRENGTH • TERMITE PROOF
EKKI (IRONWOOD)
• LASTS FOREVER • BORER PROOF

ICHABOD T. WILLIAMS & SONS INC.
220 11th Ave., New York, N. Y.
Phone Watkins 4-4343

UNUSUAL OPPORTUNITIES
can be found each week
in the
SEARCHLIGHT SECTION

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

SEARCHLIGHT Equipment Locating Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised.* (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads to see if what you want is not *currently* advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P.O. Box 12, N. Y. 36, N. Y.

Please help us locate the following equipment components.

.....
.....
.....

NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY 7/23/59

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — **Additional cards on following pages**

NEW ENGLAND

Goodkind & O'Dea

Consulting Engineers

Design and Supervision
Foundations, Structures, Highways

1214 Dixwell Ave., Hamden, Conn.
610 Bloomfield Ave., Bloomfield, N. J.
325 Spring Street, New York 7, N. Y.
198 W. Lake Street, Chicago 1, Ill.

John Clarkeson

Consulting Engineer

Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities

Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

Fay, Spofford & Thorndike, Inc.

Engineers

Airports, Bridges, Express Highways
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Bldgs.
Incinerators and Power Plants

Designs — Investigations
Supervision of Construction

Boston, Massachusetts

Jackson & Moreland, Inc.
Jackson & Moreland Int'l., Inc.

Engineers and Consultants

Electrical—Mechanical—Structural

Design and Supervision of Construction
for
Utility, Industrial and Atomic Projects

Surveys—Appraisals—Reports

Machine Design-Technical Publications
Boston — New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants—Electrical, Steam and Hydraulic Engineering—Investigations, Reports, and Appraisals.
Boston, Mass. — Charlotte, N. C.

Metcalf & Eddy

ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory
1300 Statler Building, Boston 16

Moore Survey & Mapping Corp

Engineers — *Surveyors*

Aerial surveys, Ground surveys,
Geodetic Control, Hydrographic surveys,
Construction surveys, Tax Maps.
29 Crafton Circle Shrewsbury, Mass.

C. W. Riva Co., *Engineers*

Edgar P. Snow — John F. Westman
Highways, Bridges, Tunnels, Airports, Foundations, Sewerage, Water Supply
511 Westminster St., Providence 3, R.I.
Great Neck, N. Y. — No. Attleboro, Mass.

MIDDLE ATLANTIC

Airport Fueling Systems, Inc.

Specialists in Liquid Handling Systems
1212—18th Street, N.W.
Washington 6, D. C.

CONSULTANTS!

This section provides you with a dignified, ethical means of presenting your specialized services to key men in engineering.

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, aerial topographic mapping.
1212 - 18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8131

Ewin Engineering Corporation

Designers of Port Facilities, Foundations, Industrial Plants, Bridges, Highways, Sewage Disposal and Municipal Projects.

5104 MacArthur Blvd. N.W.
Washington, D. C.

DuPont Plaza Center, Miami 32, Fla.
150 Savannah St. — Mobile, Ala.

Penniman & Browne, Inc.

Engineering Division

Soils Engineering—Test Borings Load Testing—Asphalt & Concrete Design—Field and Plant Control Steel Inspection—Mobile X-Ray
6252 Falls Rd. — Baltimore 9, Md.
VAlley 5-6511

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Maddox and Hopkins

Engineers and Surveyors

Plane and Geodetic Surveys
Topographic Maps — Photogrammetry
Highways, Utilities, Structures
8506 Dixon Ave., Silver Spring, Md.

Greer Engineering Associates

Soils Engineers

Site Investigations; Foundation Analyses for Buildings, Bridges, Airports, Highways, Earth Dams, Pavements; Field Inspection; Laboratory and Field Testing for all types of Earth work.
98 Greenwood Avenue Montclair, N. J.

Louis Berger & Associates

Consulting Engineers
Studies, Design and Supervision
Highways—Structures
Airfields—Foundations
177 Oakwood Avenue — Orange, N. J.
2nd & Locust Streets — Harrisburg, Pa.
200 S. Main St. — Salt Lake City, Utah
40 rue du Rhone — Geneva, Switzerland

Joseph S. Ward

Consulting Soil and Foundation Engineer

Site Investigation, Boring Supervision, Laboratory Soil Testing, Foundation and Pavement Analysis and Design, Construction Supervision, Engineering Reports and Consultation
94 Roseland Avenue — Caldwell, N. J.

Edwards and Kelcey

Engineers and Consultants

Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark 2, New Jersey
Boston — New York
Salt Lake City — Minneapolis

Porter, Urquhart, McCreary & O'Brien

O. J. Porter & Co.
CONSULTING ENGINEERS

Airports — Highways — Expressways — Buildings — Bridges — Dams — Harbors — Foundations — Stabilization — Pavements
Reports, Designs & Supervision
415 Frelinghuysen Ave., Newark 5, N.J.
4201 Sunset Blvd. Los Angeles 29, Cal.
1421 - 47th Avenue Sacramento 22 Cal.
1140 Howard St. San Francisco 3, Cal.
421 Minor Ave. N. Seattle 9, Wash.

Boswell Engineering Co.

Consulting Engineers

Highways, Bridges, Airports, Municipal

Ridgefield Park, N. J.
West Nyack, New York
Salt Lake City, Utah
Anchorage, Alaska

General Applied Science Laboratories, Inc.

Services and Consulting in Engineering Science

Experimental and analytical services to the engineering and construction industries in the fields of structural vibration and stress analysis, aerodynamics, hydrodynamics, electronics and high speed computation techniques.

60 Hempstead Avenue, Hempstead, N.Y.
IVanhoe 6-4000

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St. — Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design and Supervision of Construction of Bridges, Highways, Expressways, Buildings, Special Structures, Airports and Airport Facilities

111 Eighth Avenue, New York 11, N.Y.

Milwaukee - Washington - Philadelphia
Paris - Athens - Tehran

Blauvelt Engineering Co.

CONSULTING ENGINEERS

Highways,
Bridges,
Reports

468 Fourth Avenue
New York 16, N. Y.

Clinton Bogert Engineers

Consultants

Clinton L. Bogert — Ivan L. Bogert
Donald M. Ditmars — Robert A. Lincoln
Charles A. Manganaro — William Martin
Water & Sewage Works — Incinerators
Drainage — Flood Control
Highways and Bridges — Airfields
145 E. 32nd St., New York 16, N. Y.

Bowe, Albertson & Associates

Engineers

Sewage and Water Works — Industrial Wastes — Refuse Disposal — Municipal Projects — Industrial Buildings — Reports — Plans — Specifications — Supervision of Construction and Operation — Valuations — Laboratory Service
75 West Street New York 6, New York

Buck, Seifert and Jost

Consulting Engineers

Water Supply — Sewerage — Hydraulic Developments—Reports and Valuations, Chemical and Biological Laboratories,
New York City, 112 E. 19th St.

Gibbs & Hill, Inc.

Consulting Engineers
Water, Sewage & Industrial Waste Treatment Works—Roads, Bridges & Railroads—Conventional & Nuclear Power Generation — Electric Transmission & Distribution Systems—Industrial & Communication Facilities.
Los Angeles — NEW YORK — Tampa

Professional Assistance

in solving your most difficult problems is offered by consultants whose cards appear in this section.

Ebasco Services Incorporated

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering
Appraisal
Two Rector Street New York 6, N. Y.
209 S. LaSalle Street Chic., 4, Ill.
1416 Commerce Bldg. Dallas 1, Texas
511 Equitable Bldg. Portland 4, Ore.
120 Montgomery Street
San Francisco 4, Cal.
1625 Eye Street, N.W. Wash. 4, D. C.

Hardesty & Hanover

Consulting Engineers

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Expressways and Thruways
Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Reports • Feasibility Studies • Evaluations • Designs • Port Development Foundations • Highways and Bridges Shipyards • Marine Structures • Floating Dry Docks • Graving Docks • Bulkheads • Piers • Wharves • Power Plants • Industrial Buildings

27 William Street, New York 5, N. Y.

Hazen and Sawyer

Engineers
Richard Hazen — Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
122 East 42nd St. — 3333 Book Bldg.
New York 17, N. Y. — Detroit 26, Mich.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations,
Express Highways
Administrative Services
Kansas City - Cleveland - New York

King & Gavaris

CONSULTING ENGINEERS

Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction

425 Lexington Ave., New York 17, N.Y.

Litchfield Whiting Bowne & Assoc.

Engineers — Architects

Sewage, Water, Bridges, Airports, Flood Control, Electrification, Hospitals, Schools, City Planning, Abbatoirs, Highways, Air Conditioning, Industrial Buildings, Military.
292 Madison Avenue, N. Y. 17, N. Y.
Rome — Tehran — Bangkok

Frederick C. Lowy

Consulting Engineer

PRESTRESSED CONCRETE

259 W. 14th St., New York 11, N. Y.

Modern Engineering Corporation

Design—Consulting

154 Nassau St., New York, N. Y.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — **Additional cards on preceding and following pages**

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

415 Madison Ave., New York 17, N.Y.
Eldorado 5-4800

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

165 Broadway, New York 6, N. Y.

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

642 Fifth Ave. New York 19, N. Y.

Malcolm Pirnie Engineers

Malcolm Pirnie — Ernest W. Whitlock
Robert D. Mitchell — Carl A. Arenander
Malcolm Pirnie, Jr.

MUNICIPAL & INDUSTRIAL
Water Supply - Water Treatment
Sewage and Waste Treatment
Drainage - Sewerage - Refuse Disposal

25 West 43rd St., New York 36, N. Y.

The Pitometer Associates

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special Hydraulic Investigations

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett — Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

203 Park Ave., Plainfield, New Jersey

Praeger-Kavanagh

Engineers

126 East 38th St., New York 16, N. Y.

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Ave., New York 17, N.Y.

Seelye Stevenson Value & Knecht

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Railroads, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies, Real Estate Development
Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad — David G. Baille, Jr.
Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7

Havana, Cuba — Lima, Peru
Bogota, Columbia, Caracas, Venezuela

D. B. Steinman

Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction
Strengthening, Investigations,
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Tippetts-Abbett-McCarthy-Stratton

Engineers and Architects

Ports, Harbors, Flood Control, Power Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

375 Park Avenue, New York 22, N. Y.

Lawrence S. Waterbury

Consulting Engineer

Bowling Green 9-9298
26 Broadway New York 4

The J. G. White Engineering Corp.

Design — Construction
Reports — Appraisals

80 Broad Street, New York

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.
Troy, N. Y.

CONSULTANTS!

This section provides you with a dignified, ethical means of presenting your specialized services to key men in engineering.

Royal Contracting Corporation

Mud-Jacking, Drilling & Grouting Specialists

Box 141, Bridgeport, Pa.
(Montgomery Co.)
Ph. BRoadway-2-5891

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices, Dillsburg, Penna.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports
Traffic & Parking — Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices
Pittsburgh, Pa. — Philadelphia, Pa.
Daytona Beach, Fla.

Grof & Myers

Consulting Engineers

Highways — Bridges — Airports
Surveys — Reports — Plans
Construction Supervision

1824 North 4th St. Harrisburg, Pa.

Robert W. Lowry, Inc.

Consulting Engineers

Investigations, Reports, Design, Supervision, Airports, Highways, Expressways, Bridges, Structures, Prestressed Design, Strengthening, Soil Engineering, Sewerage & Water Systems.

227 Pine Street, Harrisburg, Penna.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highways and Expressways

900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Aero Service Corporation

Aerial topographic maps — photo-maps for engineering projects anywhere in the world—highways, railroads, cities, power and pipe lines, mining development. Soil studies and electronic surveys of large areas; resources inventories.

210 E. Courtland Philadelphia 20

Albright & Friel Inc.

Consulting Engineers

Water, Sewage, Industrial Wastes and Incineration Problems, City Planning Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates

3 Penn Center Plaza Phila. 2, Pa.

Lawrence T. Beck and Associates

ENGINEERS AND CONSULTANTS

Philadelphia New York Washington

Fridy, Gauker, Truscott & Fridy, Inc.

Architects & Engineers

Water, Sewer, Waste Disposal, Roads, Airports, Power & Lighting, Petroleum Facilities, Hospitals, Schools, Public & Industrial Buildings, Reports, Plans, Supervision, Appraisals.

1321 Arch St. Philadelphia 7, Pa.

Yule, Sticklen, Jordan & McNee

ENGINEERS

Bridges, Highways, Airports
Design, Investigations, Reports
Supervision of Construction
Civil, Structural Mechanical & Electrical

Cedar Cliff Drive
Camp Hill, Pa.

1225 Vine Street
Philadelphia 7, Pa.

5584 North High Street
Columbus, Ohio

Justin & Courtney

Consulting Engineers

Joel B. Justin - Neville C. Courtney
Dams and Power Problems, Hydroelectric, River Basin Developments, Water Supply, Foundations.

121 South Broad Street
Philadelphia 7, Pa.

Hunting, Larsen & Dunnells,

Engineers

Industrial Plants — Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision, Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Design and Consulting Engineers

Electrical • Mechanical • Structural
Civil • Nuclear • Architectural

First National Building
Pittsburgh 22, Pennsylvania

Pennsylvania Drilling Company

Subsurface Explorations, Grouting, Industrial Water Supply, Mineral Prospecting

Large Diameter Drilled Shafts, Reports

1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson Miss.; Harrisburg, Pa.; College Park, Md.

Engineer Associates

John N. J. Callahan, P.E.
Consulting Engineers
Design & Construction Surveyors

7 Marion Ave., Hanover
Wilkes-Barre, Pa.
Valley 2-8636

Frank D. McEnteer's Associates, Inc.

Consulting Engineers

Bridges, Highways, Industrial Plants
Design, Investigations, Surveys

Terminal Building, Clarksburg, W. Va.

SOUTH

Harry Hendon & Associates, Inc.

Engineers

Civil Engineers—Public Utilities
Investigations—Designs
Supervision of Construction

P. O. Box 2221 — 925 Sligh Blvd.
Birmingham 1, Ala. — Orlando, Florida

Palmer and Baker Engineers, Inc.

Consulting Engineers - Architects

Surveys-Reports-Design-Supervision
Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. — New Orleans, La.
Washington, D. C.

Professional Assistance

in solving your most difficult problems is offered by consultants whose cards appear in this section.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — **Additional cards on preceding and following pages**

Brown Engineering Company, Inc.

Architects—Engineers

Civil—Mechanical—Electrical—Industrial

Highway Design, Structural Design
Water Supply, Airports
Sewage Disposal, Industrial Plants
Land Development, Bridges
Railroads, Reports
Commercial & Industrial Buildings

P.O. Drawer 917, Huntsville, Alabama

William R. Smith & Assoc.

Civil Engineers

Foundations; Waterfront & Harbor Structures; Soil Testing; Test Boring; Load Testing; Construction Supervision; Plane, Geodetic & Hydrographic Surveys; Reports.
200 E. Broward Blvd., Fort Lauderdale, Fla.

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

Law-Barrow-Agee Laboratories

Soils Engineers & Consultants

Soil Testing — Soil Boring — Rock Drilling—Load Testing—Field Control —Engineering Studies—Chemical Analysis—Physical Testing
Box 1558 Atlanta 1 Ga.
Serving the entire South

Cunningham Core Drilling and Grouting Corp.

Soil Sampling & Testing—Core Borings for Highways & Heavy Structures—Heavy Rotary Drilling—Large Earth Auger Drilling Belled Caissons & Mineral Testing—Foundation Treatment & Pressure Grouting
P. O. Box 513 Salem, Virginia

J. Stephen Watkins

Consulting Engineers

Highways—Bridges—Sewerage
Water Supply—Industrial Plants

446 E. High St., Lexington, Kentucky
5402 Preston Highway, Louisville, Ky.
107 Hale St., Charleston, W. Va.

Eustis Engineering Company

FOUNDATION AND SOIL MECHANICS INVESTIGATIONS

Soil Borings *Laboratory Test*
Foundation Analyses *Reports*

3635 Airline Highway
Metairie, Louisiana

Southern Mapping & Engineering Company

Planners and Surveyors
Airports, Highway, Water, Sewage, Topography, Reports, Investigations, Pipe Line Surveys, Acquisition of Right-of-way.
216 Commerce Pl., Greensboro, N. C.

THE CONSULTING ENGINEER

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

Schmidt Engineering Co. Inc.

Consulting Engineer

Investigations, Reports, Designs, Supervision Heavy Construction—Dams and Hydroelectric Projects—Foundation Explorations and Treatment—Water and Sewerage Works—Bridges & Highways
Emerson Building Chattanooga, Tenn.

ETCO Engineers and Associates

Foundation Consultants

Test Borings — Laboratory Tests
Recommendations, Design and Supervision

2116 Canada Dry St., Houston 23, Tex.
727 Main St. Baton Rouge, La.
427 Carondelet St., New Orleans 12, La.

Associated Engineers, Inc.

Industrial Design & Construction

Process Piping
Mechanical, Electrical, Structural and Concrete

Huntington, W. Va.

Mott Core Drilling Company

Core Borings for Buildings, Bridges
Foundation Soil Tests, Highways
Pressure Grouting, Dams, Mine Shafts
Mineral Prospecting

826-846 Eighth Ave. Huntington, W.Va.

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

20 North Wacker Drive, Chicago

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages - Shore Protection
Parks - Field Houses - Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Public Transit	Subways
Traffic & Parking	Railroad Facilities
Expressways	Industrial Plants
Grade Separations	Municipal Works
Urban Renewal	Port Development

150 North Wacker Drive, Chicago 6
San Francisco Toronto Oklahoma City

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
14 E. Jackson Boulevard
Chicago 4, Illinois

CHECK

this section whenever you need professional advice.

Harza Engineering Co.

Consulting Engineers

Calvin V. Davis E. Montford Fuelk
Richard D. Harza

Hydroelectric Plants & Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development

100 West Madison Street Chicago 6

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed & Movable Bridges, Expressways, Industrial Plants, Airports, Dams.
Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.
Oding Bldg., Lansing 33, Mich.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purehasing
Steam - - Hydraulic - Gas
Public Utilities - - Industrials

231 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Suhr, Peterson, Peterson & Suhr

Consulting Engineers

REPORTS—PLANS—SUPERVISION
Sewerage, Water Supply, Flood Control & Drainage, Airports, Roads, Surveys
Fixed & Movable Bridges
130 N. Wells St., Chicago 6, Ill.

Harley, Ellington and Day, Inc.

CONSULTING ENGINEERS

Airports, Highways, Bridges, Ports, Structures, Mechanical, Electrical, Design and Supervision
153 E. Elizabeth St. Detroit 1, Mich.
1246 20th St. N.W. Washington 6, D.C.

Chas. W. Cole & Son

Engineers and Architects

3600 E. Jefferson Blvd.
South Bend, Indiana

2112 W. Jefferson St.
Joliet, Illinois

The Hinchman Corporation

Consulting Engineers

World Wide Activities
CORROSION CONTROL
Surveys - Designs - Specifications

Francis Palms Building
Detroit 1, Michigan

The H. C. Nutting Company

Testing Engineers—Inspection Service
Foundation Investigation—Test Borings
Soil Mechanics—Sewage Flows
Construction Control—Concrete
Water Waste Survey

4120 Airport Road Cincinnati 26, O.

The Austin Company

Design and Construction
Manufacturing and Process Plants
Newspaper and Broadcasting Bldgs.
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Merchandising Bldgs. & Facilities
Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

A. A. Burger, H. H. Moseley, J. W. Avery, F. S. Palocsay, E. S. Ordway, A. M. Mock, G. H. Abplanalp, S. H. Sutton
Frank C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Wastes, Valuation—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants Office Buildings
Stadiums Grand Stands Field Houses
Bridges Garages Laboratories

7016 Euclid Ave. Cleveland 3, Ohio

Photronix, Inc.

offering an integrated process of
AERIAL PHOTOGRAMMETRY
AND
ELECTRONIC COMPUTATION
For Engineers, By Engineers

790 King Ave. Columbus 12, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings—Diamond Drilling
Load Tests
Soils Mechanics Laboratory

1910 North 12th St. Toledo 3, Ohio

WEST OF MISSISSIPPI

Engineering Consultants, Inc. ECI

Multipurpose Hydroelectric Projects
Dams, Canals, Tunnels, Structures
Power Plants, Transmission Systems
Municipal Engineering, Irrigation
Investigations, Reports, Supervision

1940 W. Mississippi Denver 23, Colo.

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures

2000 South Acoma St.
Denver 23, Colorado

Stanley Engineering Company

Consulting Engineers

Hershey Building 208 S. LaSalle St.
Muscatine Ia. Chicago 4, Ill.

Burns & McDonnell

Engineers—Architects—Consultants

4600 E. 63rd St. Trafficway
Kansas City 41, Missouri

THIS SECTION is available to consulting engineers to contact prospective clients every week or every other week.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest most direct method of contacting consultants who may be available NOW.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — **Additional cards on preceding pages**

Black & Veatch

Consulting Engineers

Water - Electricity - Sewage - Industry
Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

1500 Meadow Lake Parkway
Kansas City 14, Missouri

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel Engineering Co.

Engineers—Architects

Bridges, Structures and Reports,
Industrial and Power Plant Engineering

915 Olive St., St. Louis 1, Mo.
417 Montgomery St., San Francisco, Calif.

Benham Engineering Company

Established in 1909
Design and Consulting Engineers

315 N E 23rd Street
Oklahoma City 5, Oklahoma

Spencer J. Buchanan and Associates, Inc.

Consulting Engineers

Soil Mechanics and Foundation Engineering. Civil Engineering Services. Reports, Design and Field Supervision.
310 Varisco Building, Bryan, Texas
TAylor 2-3767

Soil Mechanics Incorporated

Foundation Exploration and Testing Services

Site Investigations, Soil Borings, Field and Lab Testing, Load Tests, Reports

310 Varisco Building, Bryan, Texas
TAylor 2-3767

Lockwood, Andrews & Newnam

Consulting Engineers

Navigation Facilities — Public Works
Airports — Earthworks — Roads,
Structural, Mechanical — Electrical
Reports — Design — Supervision
Surveys — Valuations
Corpus Christi—Houston—Victoria, Texas

FAR WEST

International Engineering Company, Inc.

ENGINEERS

Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California

Jacobs Associates

Consulting Construction Engineers

TUNNELS—DAMS
EARTHMOVING—FOUNDATIONS
Methods, Cost Estimates, Plant Design, Management, Surveys, Engineering Geology, Materials Handling
503 Market St., San Francisco 5, Calif.

Nevada Testing Laboratories, Ltd.

Engineering—Civil—Soils & Foundation Consultants—Field Testing—Soil Borings — Rock Drilling — Materials Field Control—Load Tests—Laboratory Testing—Soils—Concrete—Asphalt
300 W. Boston Ave. Las Vegas, Nev.

FOREIGN

The Foundation Engineering Company of Puerto Rico

Consulting Engineers

Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, supervision.
P.O. Box 821, San Juan, Puerto Rico

Puerto Rico Testing Services, Inc.

Soils and Foundation Consultants
Borings-Laboratory Tests-Supervision
Concrete—Materials—Designs—Reports
P.O. Box 588
Roosevelt (San Juan) Puerto Rico

INSPECTION & TEST

The Haller Testing Labs., Inc.

140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston Plainfield, N. J. New Haven

Robert W. Hunt Company

Inspection and Testing of Engineering Materials & Equipment

General Offices and Laboratories
2810 South Clinton Street, Chicago 7,
All Principal Cities

Johnson Soils Engineering Laboratory

Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests - Shear & Consolidation Tests - MOBILE LABORATORIES
193 West Shore Ave., Bogata, N. J.
Bogata-Hubbard 7-4408

Pittsburgh Testing Laboratory

A national service with complete laboratory and inspection facilities.
Laboratories in principal cities.
Main Office: 1330 Locust St.,
Pittsburgh, Pa.

Quick

solutions to your technical problems are available through these consultants. Think first of the Professional Services Section of your publication when considering calling in an expert.

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps. Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories
907 Penn Ave. Pittsburgh 22, Pa.
Reps—Chicago—Huntington, W. Va.

Clyde E. Williams & Assoc., Inc.

Aerial Photos - Enlargements - Topographic Maps

At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

GEOLOGISTS

Geologic Associates

ENGINEERING GEOLOGISTS

Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling
Brentwood, Tennessee
Phone (Nashville) VErnon 2-1748

REMEMBER!!

You can depend on these consultants for a fast accurate solution to your problems. Consult them when necessary.

CONSULT THESE SPECIALISTS . . .

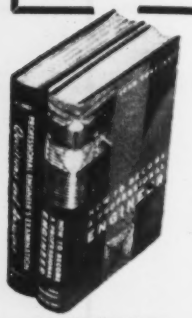
when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

	PER WEEK		
	13 times	26 times	52 times
¾"—$14.35	$13.35	$12.45
1½"—$23.85	$22.30	$21.00

Win your PROFESSIONAL ENGINEER'S license *faster*

PREPARE TO PASS EXAMINATIONS THIS DIRECT, PRACTICAL WAY!



Covers all major phases of P.E. examinations

Here in this Library you will find complete, detailed instructions on how to get your Professional Engineer's license without difficulties or delays. It clears up questions about the **what—where—how**—and **why** of licensing regulations and examination procedures so that you can start upon this important step for an increasingly successful engineering career.

What's more, the Library brings you over 500 questions selected from actual examinations. These show you exactly the type of questions you will be asked—help you track down areas where you can improve your knowledge before you find yourself in the examination room. **For every question there is a detailed answer of the type examiners accept and credit.**

PROFESSIONAL ENGINEERS'

License Examination Library

2 volumes • *724 pages* • **$12.50**

LIBRARY INCLUDES: How to Become a Professional Engineer, by J. D. Constance, and **Professional Engineer's Examination Questions and Answers,** by W. S. LaLonde.

You get over 500 questions selected from actual examinations for the Professional Engineer license, the Land Surveyor license, and the Engineer-in-Training Certificate. Representative of the examinations being given now in all states, these questions cover mechanical, electrical, civil, structural, and chemical engineering, and include engineering economics and land surveying.

10 Days' FREE Examination

McGraw-Hill Book Co., Inc., Dept. ENR-7 23 59
327 W. 41st., N. Y. 36, N. Y.

Send me the **Professional Engineers' License Examination Library** for 10 days' examination on approval. In 10 days I will either remit $12.50, plus few cents delivery, or return books postpaid. (We pay delivery cost if remittance accompanies coupon; same return privilege.)

Print name .....

Address .....

City ..... Zone..... State.....

Company & Position .....

For price and terms outside U.S.A. write McGraw-Hill Int'l., N.Y.C. 36 — Dept. ENR-7 23 59

ADVERTISERS IN THIS ISSUE

Acker Drill Co, Inc. 91
Adams & Westlake Co. 32
Allison Div., General Motors Corp. 74-75
Aluminum Company of America 45
American Bridge Div., U. S. Steel Corp. ..... 3rd Cov.
American Hoist & Derrick Co. 77
American Vitrified Products Company 5
Armco Drainage & Metal Products, Inc. 66-67

Bay City Shovels, Inc. 11
Bethlehem Steel Co. 33
Business Week 65

Carter-Waters Corporation 13
Cast Iron Pipe Research Association 40-41
Clark Equipment Co., Const. Mchy. Div. 51, 53, 55
Commercial Shearing & Stamping Co., The 59

Detroit Diesel Engine Div., General Motors Corp. 7
Douglas Fir Plywood Association 34-35

Elgood Equipment Corp. 63
Esso Standard Oil Company 18

Firestone Tire & Rubber Company, The 15
Fruehauf Trailer Company 56

Gardner-Denver Company 39
Goodyear Tire and Rubber Co. 1
Grid Flat Slab Corp. 44
Griffin Wellpoint Corp. 27
C. L. Guild Construction Co., Inc. 63
Gulf Oil Corporation 46-47

Heltzel Steel Form & Iron Co. 12
Huber-Warco Co. 14

Jenkins Bros. 16

Kern Instruments, Inc. 57
Leschen Wire Rope Div., H. K. Porter Co., Inc. 68-69
Link-Belt Speeder Corp. 4

Mayo Tunnel & Mine Equipment 63
Moretrench Corporation 64

Neenah Foundry Company 28
Northwest Engineering Co. 3

Pittsburgh-Des Moines Steel Co. ..... 2nd Cov.

Raymond International Inc. 29
Reda Pump Company 64
Remington Arms Company, Inc. 10
Ric-Wil Inc. 48

Sauerman Bros., Inc. 54
Servicised Products Corp. 52
Shlagro Steel Products Corp. 50
Sika Chemical Corp. 70
Sprague & Henwood, Inc. 62
Symons Clamp & Mfg. Co. 2

Texaco Inc., Asphalt Sales Div. ..... 4th Cov.
Thew Shovel Co. 60

Umeco Optical Division 91
Underpinning & Foundation Co., Inc. 91
U. S. Rubber Co., Mechanical Goods Div. 20
U. S. Steel Corp. 8-9

Williams Brothers 62

Professional Services 87-90

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 82-83
Notices
Proposals 79-81
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 84-86

COMPACT, POWER-PACKED ACKER TEREDO CORE DRILLS

SPEEDS SOIL SAMPLING

IN A VARIETY OF WAYS:

- Drive Sampling
- Undisturbed Sampling
- Penetration Testing
- Permeability Testing
- Wash Boring
- Driving Casing
- Rock Coring and many more!

Whatever the sampling technique, the Acker Teredo is up to it! Its modern design and host of useful features makes the Teredo the most useful you can buy!

It's ruggedly built, yet compact and light enough to be completely portable. Mount it on skid base, truck or trailer and power it with gasoline, diesel, electric or air motor. It's easy to use — inexpensive to operate!

Write today for Bulletin 30-ENR.

ACKER DRILL CO., Inc. P.O. Box 830 Scranton 2, Pa.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

UMECO

TRANSITS • LEVELS

Guaranteed **QUALITY**

Guaranteed **ACCURACY**

Guaranteed **PERFORMANCE**

Guaranteed **SERVICE**

LOW COST

REPLACEMENT PARTS READILY AVAILABLE

If your supplier has no stock of our instruments, ask him to write us.

•

Send for catalogs

UMECO OPTICAL DIVISION

465 California St. San Francisco 4, Calif.

Representatives:

West Coast:
A. LIETZ CO.
840 Post St.,
San Francisco,
224 S. Hope St.,
Los Angeles

East Coast
HOMER F. RICHARDS
54 Fairview Ave.,
Reading, Mass.

U.F.C. makes tough jobs look easy!

100 BROADWAY, New York City

Driving 40' open end piles in sub-basement. Only entrance 3' x 4'. 12' headroom.

UNDERPINNING AND FOUNDATION CO.

✓PILING ✓FOUNDATIONS
✓SHORING ✓UNDERPINNING
✓CONSULTATION & DESIGN

UNDERPINNING & FOUNDATION CO., INC.
155 E. 44th St., New York 17, N. Y.
General Contractors For More Than 50 Years
Inquiries are invited — no obligation

Engineering Trainee Exchange

LAST MONTH 99 U. S. engineering and science students went abroad to summer jobs in western European countries. At the same time there were 69 foreign students coming here to summer work, all under the program of the International Association for the Exchange of Students of Technical Experience (IAESTE). This is a commendable effort that needs to be known better and supported more broadly.

IAESTE was founded in 1948 at London University's Imperial College. That year the 10 founding countries in Europe exchanged 920 students for summer employment; ten years later they had been joined by 16 additional countries (extending to Tunisia, Union of South Africa, Ceylon and India). By now the countries have exchanged a total of 40,000 students.

The U. S. Committee for IAESTE was formed in 1955, and made up, as required, of industry, university and student organization representatives. This year it accepted sponsorship by Engineers Joint Council, and thus hopes to strengthen ties with U. S. industries employing engineers, architects and physical scientists.

The program is intended to be reciprocal, on a one-for-one basis. Each year at an international conference of IAESTE secretaries, the student applicants are "bartered" with the summer-job offerings from all the member countries. This year, the U. S. had 200 good, screened applicants who wanted to go abroad. But since we had only 69 jobs here to offer in exchange, only 99 Americans got to go. By way of contrast, West Germany has taken 1,200, Austria 300, Turkey 180 and Norway 150.

Now, this is not necessarily all altruistic internationalism. Josef Wischeidt, executive secretary of the U. S. IAESTE Committee, says employers he has dealt with seek summer employees from abroad for more than just the do-good reason. Some want to compare the trainees with U. S. students; some may be brainpicking, if their trainees have had particular schooling or experience; others want foreign contacts in the country from which they choose summer employees; or they may be concerned with recruiting the trainee permanently.

Whatever his purpose, the employer has final say on accepting or rejecting the student IAESTE picks for him. Once the student is accepted for eight to 10 weeks of summer employment, the employer here pays a $100 fee to IAESTE (which handles all transportation and entry arrangements) and agrees to pay the trainee a tax-free maintenance allowance, usually comparable to after-tax earnings paid U. S. college students in comparable summer employ. The trainees pay their own transportation costs, and all who come here speak English.

Among U. S. organizations that have taken part in the program are many known in construction. These include the Colorado Department of Highways; J. E. Greiner; Bechtel; D. B. Steinman; Fay, Spofford & Thorndike; Hardesty & Hanover; Porter, Urquhart, McCreary & O'Brien; The Lummus Company—plus manufacturers such as Dorr-Oliver, G.E., Allis-Chalmers, Cummins Engine and others.

Next fall, IAESTE will be canvassing for more employers to take foreign engineering students as summer-hires. The more that are taken, the more U. S. students will get to go abroad for useful summer experience. It is hoped more of construction's employers will see merit in participating when next fall's invitations go out.

Beware the Consequences

IF CONGRESS WRITES a new housing bill, it should not repeat its first mistake of easing the allowable terms of government-insured housing mortgages. The pressures for such changes, which have come from the home-building industry, are, we believe, mistakenly inspired. The easier financing sought would not be in the best interests of the economy, and therefore not in the best interests of the homebuilding industry itself.

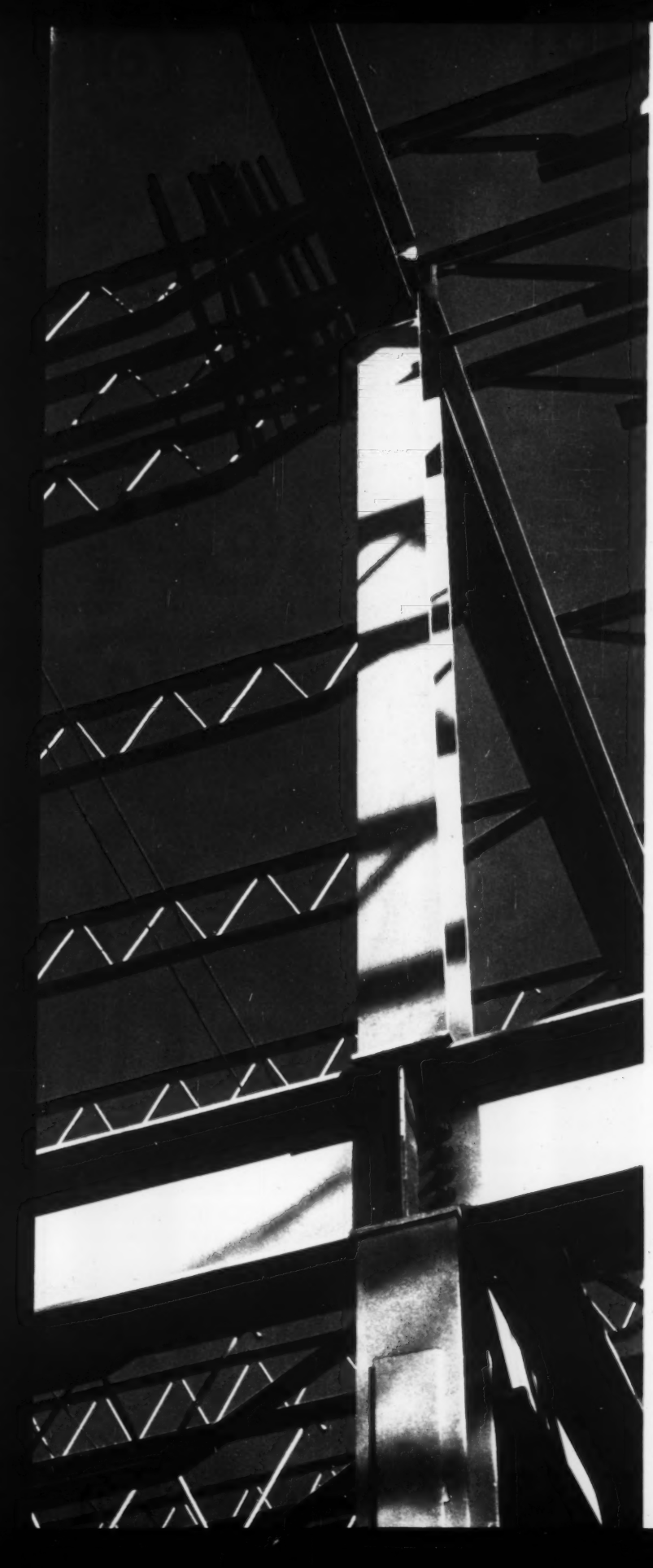
The changes include extending the allowable life of FHA and VA mortgages from the present 30 years to 35 years and a further lowering of down payments on houses bought with FHA-insured mortgages.

A longer mortgage-life would perhaps reduce the sales resistance homebuilders encounter because of high costs, since lower monthly carrying charges would have to be paid by the home buyer. In the long run, however, this is not the way to stimulate home ownership. And what is even more important, this "advantage" of a longer amortization period would tend to relieve the home-building industry of its responsibility to keep the price of its product under control.

These requests for longer and longer mortgage terms could become a habit in the industry. If a 35-year term is acceptable today, what would be wrong with 40 years in 1960? Or 45 years, the year after that?

And lower down payments would increase the problems of homebuilders, rather than ease them. The larger loans that would be required would place additional strains on a mortgage-money market that is already under severe pressure.

Requests for such legislation should be weighed carefully by Congress in the light of the consequences. These include a reduction in the effectiveness of the FHA concept of sound mortgage insurance, a growing feeling on the part of the home buyer that government in some way should make home purchasing completely painless, and a whittling away of any incentive on the part of homebuilders to provide better houses at lower costs. Such consequences are too serious for Congress to encourage with legislation.



They look light . . .

and they are light . . .

so they're easy to install

. . . and they're strong!

USS AmBridge Steel Joists

USS AmBridge Steel Joists—standard and longspan—provide strong, lightweight and economical construction suitable for most any type of floor, roof and ceiling. Their underslung, open-web design provides for maximum headroom and accommodates the passage of pipes, ducts and conduits in any direction. Their ease and simplicity of erection cuts installation time. And once erected and bridged, they immediately furnish a safe working platform for other trades.

For more information about the time- and money-saving advantages of USS AmBridge Steel Joists, ask for a free copy of our new 40-page catalog.

USS is a registered trademark

American Bridge Division of United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa.

Contracting Offices in: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Elmira • Gary • Harrisburg, Pa. • Houston • Los Angeles • Memphis • Minneapolis • New York • Orange, Texas • Philadelphia • Pittsburgh • Portland, Ore. • Roanoke • St. Louis • San Francisco • Trenton • United States Steel Export Company, New York

28 miles of Asphalt

for this Texas State Highway

Photographs

(Left) Power graders were used to spread leveling course of TEXACO Asphaltic Concrete over old pavement.

(Right) Mechanical paver lays second course of TEXACO Asphaltic Concrete. Note small roller attached to paver, which bevels edge of pavement.

Contractor

Gulf Bitulithic Company, Houston

This Texas project illustrates an important advantage of Asphalt highways—the ease and economy with which Asphalt paving can be strengthened to serve increased traffic.

To the existing Asphalt pavement on this 28-mile section of State Highway 87, Texas recently added a new, two-course surface of hot-mix Texaco Asphaltic Concrete. A strong, lasting bond forms between the new and old Asphalt courses, providing a pavement which readily copes with today's heavier traffic load.

The aggregate used in the new plant-mixed Texaco Asphalt surface on Route 87 consisted of uncrushed gravel, shell screenings and sharp field sand.

Helpful information on all of the heavy-duty, intermediate and low-cost types of Texaco Asphalt paving for streets, highways, airports and parking areas is supplied in two free brochures. Our nearest office will be glad to mail you copies. No obligation.

TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
Jacksonville 1 (P.O. Box 749) • Denver 1 (P.O. Box 2100) • Philadelphia 2 (1411 Walnut St.)
Richmond 11, Va. (P.O. Box 1379) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)

TEXACO REG. T. M.

TEXACO ASPHALT